Coconino County Comprehensive Plan Appendices

In The Appendices	

Appendix A: Partnership Project Summary

How It All Began

Arizona Growing Smarter legislation, which sets a 10-year time frame on comprehensive plans, provided the initial motivation for updating the county plan. It was a small group of citizens, however, who really pushed for a substantive plan update. Representing such diverse interests as development, ranching, and the environment, these initial partners were inspired to strike a balance between development and environmental protection. That group encouraged the County's Department of Community Development to consider undertaking a major rewrite process. The driving force was a desire to protect some of the vast landscapes of the county while providing more certainty to developers and private property owners about where future development should occur.

In February 2001, Coconino County, Northern Arizona University, and the Grand Canyon Trust sponsored Steve Frisch from the Sierra Business Council (the impetus behind the Placer County, California conservation plan) to talk to the community as part of NAU's Building for Community series. As a small business owner, Frisch was able to convey to the audience the economic value of protecting and preserving the environment and conveyed to participants a level of excitement about conservation planning. A small group including the County, NAU, ranchers, building association, utility providers and environmental organizations began meeting to discuss how such a plan could be done for Coconino County. At about the same time, the County Parks and Recreation Department was about to embark on an open space and greenways plan, and County planners recognized that the Comprehensive Plan adopted in 1990 was due for an update.

Over the next few months this diverse group of interested citizen representatives worked with the County to outline a plan for how conservation and open space planning could be integrated into the comprehensive plan update. The group developed a concept paper, a management strategy, and a public participation plan. The idea for the planning effort was endorsed by the County Board of Supervisors in late 2001.

The Arizona Growing Smarter Act

The State of Arizona experienced high population growth rates throughout the 1990s. In response to concerns about the effects of such growth, new community planning legislation was passed by the state legislature. Commonly known as the 1998 *Growing Smarter Act* and 2000 *Growing Smarter Plus*, key provisions of the Acts include: required elements for comprehensive plans; mandatory zoning conformance with comprehensive plans; and more effective public participation in the planning process.

Per House Bill 2361, the purpose of *Growing Smarter* was "to more effectively plan for the impacts of population growth by creating a more meaningful and predictable land planning process, to increase citizen involvement in the land planning process, to directly acquire and preserve additional open space areas within this state…[and to] address various statewide growth management issues…". The aim was to ensure that future development occurs "in a more rational, efficient and environmentally sensitive manner that furthers the best interests of the state's citizens by promoting the protection of its natural heritage without unduly burdening its competitive economy."

Threshold populations were established to implement *Growing Smarter*, such that counties over 125,000 are required to address the topics of land use, circulation, and water. Furthermore, counties over 250,000 must also have elements regarding planning for open space acquisition and preservation, planning for growth areas, environmental planning, and cost of development. Because the 2000 census population of Coconino County was 116,320, no specific elements were required; nevertheless, this update of the Coconino County comprehensive plan does consider most of the elements required in the *Growing Smarter* legislation for larger counties.

Partnership Organization & Structure

In January 2002, after a full year of preliminary relationship building, organizing, and planning, the Coconino County Planning Partnership officially kicked off. Organizationally, the County Community Development Department staffs the Partnership. The Board of Supervisors appointed a Steering Committee initially consisting of 17 community members representing such diverse and important perspectives as Arizona Public Service Company (APS), The Diablo Trust, Northern Arizona University, Northern Arizona Building Association (NABA), Babbitt Ranches, Northern Arizona Association of Realtors, The Nature Conservancy, the Grand Canyon Trust (GCT), Coconino Community College, the Museum of Northern Arizona, small business owners, and tribal interests. The Steering Committee met monthly and discussed, reviewed, and approved all sections of the plan.

Coconino County
Comprehensive Planning Partnership

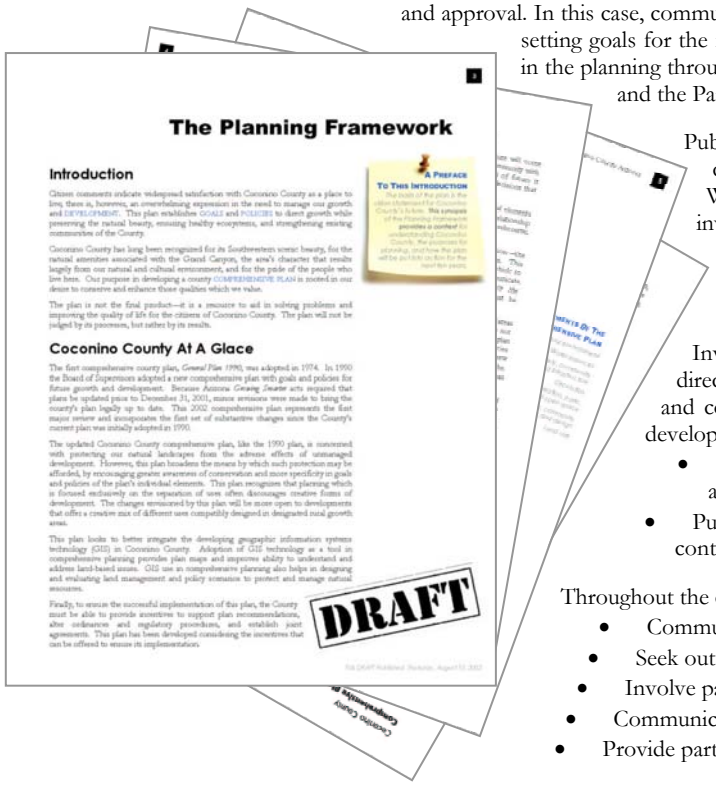
Staff of the Community Development Department worked with the Management Team, a smaller group consisting of representatives of the Community Development Department and the Parks and Recreation Department, APS, NABA, and GCT. The Management Team met weekly to set the agenda and prepare materials for the Steering Committee. A Geographic Information Systems (GIS) team met periodically to produce maps for the plan and to discuss integrating digital scientific information into the county's GIS system and analysis capabilities.

One important aspect of the process was convening representatives of the state and federal land management agencies operating in the county. The interagency working group met several times throughout the planning process to ensure that the plan would be consistent with and supportive of their land use plans. The wildlife working group's efforts drew upon their collective knowledge and expertise to identify key wildlife movement corridors that should be preserved. Their work will continue beyond the end of the planning process. Interagency working group organizations include the U.S. Forest Service, BLM, USGS, U.S. Fish & Wildlife Service, the National Park Service, Arizona State Land Department, Arizona Department of Transportation, and Arizona Game and Fish Department.

Finally, an independent, Board-appointed Science Advisory Group guided and reviewed the Conservation Framework and ensured that the goals and policies in each section of the plan are consistent with the conservation guidelines and support the overarching conservation goals. The scientific review provided assurances to the Steering Committee and the public that it was based upon the best available scientific information.

Public Participation in Developing This Plan

The plan is unique for several reasons. Often "government" develops a plan and then seeks public comment and approval. In this case, community leaders invited "government" to participate in defining the vision and setting goals for the future of the county. Community members have been intricately involved in the planning through the Steering Committee representatives, a series of public open houses, and the Partnership website, and frequent newsletter mailings.



Public participation in the development of the Coconino County comprehensive plan exceeded the minimum requirement of state law. While Arizona's *Growing Smarter* legislation describes some requisite public involvement procedures, the Partnership team developed their own public outreach plan early in the process. Formally, the project's *Public Participation & Communications Action Plan* was adopted by the Coconino County Board of Supervisors on March 19, 2002.

Involving people in the planning process requires a commitment to work directly with the public throughout the process and to ensure that public issues and concerns are consistently understood and considered. This plan has been developed with two core values in mind.

- The public shall have a voice in decisions about actions that affect their lives and property.
- Public participation includes the promise that the public's contribution will influence decisions.

Throughout the comprehensive plan development process, the Partnership worked to:

- Communicate the interests and meet the needs of all participants.
- Seek out and facilitate the involvement of those potentially affected.
- Involve participants in defining how they contribute to the process.
- Communicate to participants how their input affected decisions.
- Provide participants with the information to participate in a meaningful way.

The initial public outreach strategy was to post information to the internet. Using the County website as a framework, announcements and draft text was posted following each month's Steering Committee meetings. Developing the unique "Partnership" site bolstered support and provided greater access for those unable to attend project meetings. Ultimately the site was used to post the adopted version of the Comprehensive Plan.

One of the most effectives tool that was used to "get the word out" was the development and distribution of project mailings. The names of participants at community open houses held in 2002 provided the basis for developing a Partnership mailing list, to which names of community leaders, key County officials, and representatives of a large number of organizations were added. After an initial full-color project newsletter (highlighting comments from the open houses and the concept for the plan's vision statement), a project "toolkit" (folder) was developed and included a welcome letter, the county vision, the plan's table of contents, and an introduction. Each month as the Steering Committee reviewed and approved text, a four-page "newsletter" insert was sent to the over 800 project stakeholders. After nearly a year of mailings, the public had their personal summary of the plan's text and goal statements in just 38 pages.

As an additional outreach strategy, in June 2003 the Planning Partnership added four pages to the annual Coconino County "report to citizens." The insert explained the concepts, contents, and implications of the Comprehensive Plan. 60,000 copies of the report—including postage-paid reply/comment cards—were sent to all households and businesses in the county.

By the time the final draft of the complete plan was sent to the County Board of Supervisors for approval, many citizens had participated in the planning process, either directly through their attendance at one of the several community open houses, by sending in written comments, or by reviewing draft text as it was being developed. The Partnership team greatly appreciated the time and effort provided by Coconino County citizens in developing the Comprehensive Plan.

The 18-month planning effort officially began in January 2002. The project remained on-schedule and was completed on time with Steering Committee approval of the plan in June, 2003.

Appendix B: Coconino County Profile

Reference Note

Information in this Coconino County profile has been provided by the Arizona Department of Commerce and reprinted from the Coconino County profile with permission. 2003 data was provided by the Arizona Department of Economic Security.

Coconino County At-A-Glance

County Seat: Flagstaff. Other Incorporated Cities: Williams, Page, Fredonia, and Sedona.

2003 Estimated Population: 128,925. Labor Force: 63,175. Unemployment Rate: 5.5%.

Major Industries: Services, Retail Trade, Public Administration. Best Paying: Public Administration; Transportation & Public Utilities; Finance, Insurance & Real Estate.

Sources: Population Estimates, Population Statistics Unit, Research Administration and 2002 Preliminary Special Unemployment Report, Arizona Department of Economic Security. 2003 population estimates were released July 1, 2003 and are included in the population figures below.

County Historic Overview

Coconino County, carved out of Yavapai County, was created by the 16th Territorial Assembly in 1891. That same year, an election was held to determine the permanent county seat. Flagstaff, which had been designated the temporary county seat, won out over Williams by a vote of 419 to 97. Flagstaff remains the county seat. The original county courthouse—with various additions and renovations—is still in use.

Coconino County lies in the central region of northern Arizona, which was crossed by Spanish expeditions during the 16th, 17th and 18th centuries, and by fur trappers and traders in the 1820s and 1830s. Cattle and sheep ranching started in the 1870s and, when the railroad began serving the area a decade later, the lumber business boomed. The county is a year-round center for outdoor activities.

With 18,608 square miles, Coconino is the second largest county in the United States and the largest in Arizona, but is one of the most sparsely populated. It is characterized by rugged mountains, deep canyons and thick forests of pine, spruce, piñon, aspen and oak. Within its borders are many scenic sites—the most popular and impressive is the Grand Canyon. Other attractions are Oak Creek Canyon, Sunset Crater Volcano National Monument, prehistoric Indian ruins at Wupatki, Walnut Canyon, the Navajo National Monument, the San Francisco Peaks (Arizona's highest point at 12,633 feet), and Lake Powell (with 1,960 miles of shoreline).

Indian reservations comprise 38.1 percent of the land and are home to the Navajo, Hopi, Paiute, Havasupai and Hualapai tribes. The U.S. Forest Service and Bureau of Land Management control 32.3 percent of the land; the state of Arizona owns 9.5 percent; other public lands comprise 6.8 percent; and the remaining 13.3 percent is owned by individuals or corporations. The central corridor of Coconino County has been designated as an Enterprise Zone, as well as the central corridor of the City of Flagstaff.

Population Trends

	1960	1970	1980	1990	2000	2003*
Arizona	1,302,161	1,775,399	2,716546	3,665,228	5,130,632	5,629,870
Coconino County	41,875	48,326	75,008	96,591	116,320	128,925
Flagstaff	18,214	26,117	34,743	45,857	52,894	61,030
Fredonia	643	798	1,040	1,207	1,036	1,105

Page	2,960	1,439	4,907	6,598	6,809	7,150
Sedona+	N/A	702	1,778	2,384	2,963	3,125
Williams	3,559	2,386	2,266	2,532	2,842	2,910
Unincorporated Areas^	16,499	16,884	30,274	38,013	49,776	53,605

*Source: U.S. Census Bureau and Arizona Department of Economic Security, Population Statistics Unit. *Estimated. +Portion within Coconino County. ^Including Native American Reservations.*

Percentage Growth

	1960-70	1970-80	1980-90	1990-2000	1960-2003*
Arizona	36%	53%	35%	40%	332%
Coconino County	15%	55%	29%	20%	208%
Flagstaff	43%	33%	32%	15%	235%
Fredonia	24%	30%	16%	(14%)	72%
Page	(51%)	241%	34%	3%	142%
Sedona+	N/A	153%	34%	24%	345%~
Williams	(33%)	(5%)	12%	12%	(18%)
Unincorporated Areas^	2%	79%	26%	31%	225%

*Source: U.S. Census Bureau and Arizona Department of Economic Security, Population Statistics Unit. *Estimated. +Portion within Coconino County. ~Since 1970. ^Including Native American Reservations.*

2000 Population in Unincorporated Places of Coconino County

Bitter Springs	547	Mountainaire	1,014
Cameron	978	Munds Park	1,250
Doney Park	8,960	Parks	1,137
Grand Canyon Village	1,460	Supai	503
Kachina Village	2,664	Tonalea	562
Lechee	1,606	Tuba City	8,225
Leupp	970	Tusayan	562
Moenkopi	901		

Source: U.S. Census Bureau and Arizona Department of Economic Security, Population Statistics Unit.

Density

	2003 Population*	Land Area~	Persons per Sq. Mile
Arizona	5,629,870	113,635	49.5
Coconino County	128,925	18,617	6.9
Flagstaff	61,030	63.6	959.6
Fredonia	1,105	7.4	149.3
Page	7,150	16.6	438.7
Sedona+	3,125	6.4	488.3
Williams	2,910	43.5	66.9
Flagstaff Regional Planning Area	75,020	525.0	142.9
Regional Planning Area outside City	13,990	461.4	30.3
All Unincorporated Areas^	53,605	18,480	2.9
Unincorporated Areas outside Regional Plan.	39,615	18,018	2.2

*Source: U.S. Census Bureau and Arizona Department of Economic Security, Population Statistics Unit and local sources. *Estimated. +Portion within Coconino County. ~In square miles. ^Including Native American Reservations.*

Population Composition

Race (% of total)	Coconino County	Arizona
White	63.1%	75.5%
African American	1.0%	3.1%
Native American	28.5%	5.0%
Asian or Pacific Islander	0.9%	1.9%
Other	6.5%	14.5%
Totals	100.0%	100%
Hispanic or Latino*	10.9%	25.3%

*Source: U.S. Census Bureau, April 1, 2000 Census. * Persons of Hispanic heritage can be of any race.*

*Age (% of total)**	*Coconino County*	*Arizona*
0-14	23.7%	22.5%
15-24	19.5%	14.3%
25-44	29.2%	29.5%
45-64	20.7%	20.9%
65+	7.0%	13.0%
Median Age	29.6 years	34.2 years

*Source: U.S. Census Bureau, April 1, 2000 Census. *Percentages equal more than 100 due to rounding.*

Households

Housing Units	*Coconino County*	*% of total*	*Arizona*	*% of total*
Total Housing Units	53,443	100.0%	2,189,189	100.0%
Occupied Housing Units	40,448	75.7%	1,901,327	86.9%
Vacant Housing Units	12,995	24.3%	287,862	13.1%
For Seasonal, Recreational, or Occasional Use	9,155	17.1%	141,965	6.5%

Housing Tenure	*Coconino County*	*% of total*	*Arizona*	*% of total*
Owner-Occupied	24,835	61.4%	1,293,556	68.0%
Renter-Occupied	15,613	38.6%	607,771	32.0%

Housing by Type	*Coconino County*	*% of total*	*Arizona*	*% of total*
Total Households	40,448	100.0%	1,901,327	100.0%
Family Households	26,946	66.6%	1,287,367	67.7%
Nonfamily Households	13,502	33.4%	613,960	32.3%
Average Household Size	2.80		2.64	
Average Family Size	3.36		3.18	

Source: U.S. Census Bureau, April 1, 2000 Census.

Appendix C: County Communities Overview

Incorporated Cities & Towns

See Also

For a map of Coconino County and its communities, turn to page 9 of the Comprehensive Plan

Flagstaff

The City of Flagstaff is located at the intersection of I-40 and I-17 and has been a transportation hub since its inception. The town was established in 1881 with the arrival of the railroad. Flagstaff is the seat of government for Coconino County, with many of the county functions operated from there. The city occupies about 63½ square miles and sits at approximately 7,000 feet in elevation. Population growth has been fairly steady over the last five decades with a total population of 52,894 per the 2000 census, which indicates a 15.3 percent population increase since 1990, and a doubling of the city's size over the past forty years. Economic activities are centered on government, education, transportation and tourism.

Fredonia

Fredonia is the most northern town in Coconino County located at the intersection of U.S. Hwy 89A and State Highway 389 near the Utah border on the Arizona Strip. The town includes 7.4 square miles and sits at approximately 4,800 feet in elevation. Fredonia is the largest town in the Coconino County portion of the Arizona Strip but the population declined from 1,207 in 1990 to 1,036 in 2000.

Page

The City of Page is located in the northern portion of the county near the Utah border off Highway 89 adjacent to Lake Powell. Named for John C. Page, Commissioner of the Bureau of Reclamation under Franklin Roosevelt, Page was originally developed due to the Glen Canyon Dam project which started in the early 1950s. The City of Page was incorporated on March 1, 1975 including 16.6 square miles on Manson Mesa. Today the economic structure supporting Page depends largely on tourism drawn by the Lake as well as the Salt River Project Navajo Generating Station. The 2000 census reports that there are 6,809 residents within the community.

Sedona

The City of Sedona is located in both Coconino and Yavapai Counties at the intersection of State Routes 89A and 179. The city includes about 19 square miles, of which half is under the jurisdiction of the US Forest Service, and is at approximately 4,500 feet in elevation. Sedona was incorporated on January 4, 1988 and assumed zoning authority on July 1, 1988. Coconino County still administers the floodplain management program for the portion falling within the county boundaries which includes the uptown commercial area and adjacent residential areas. Sedona has also seen rapid growth in recent decades, with a population of 10,192 in 2000.

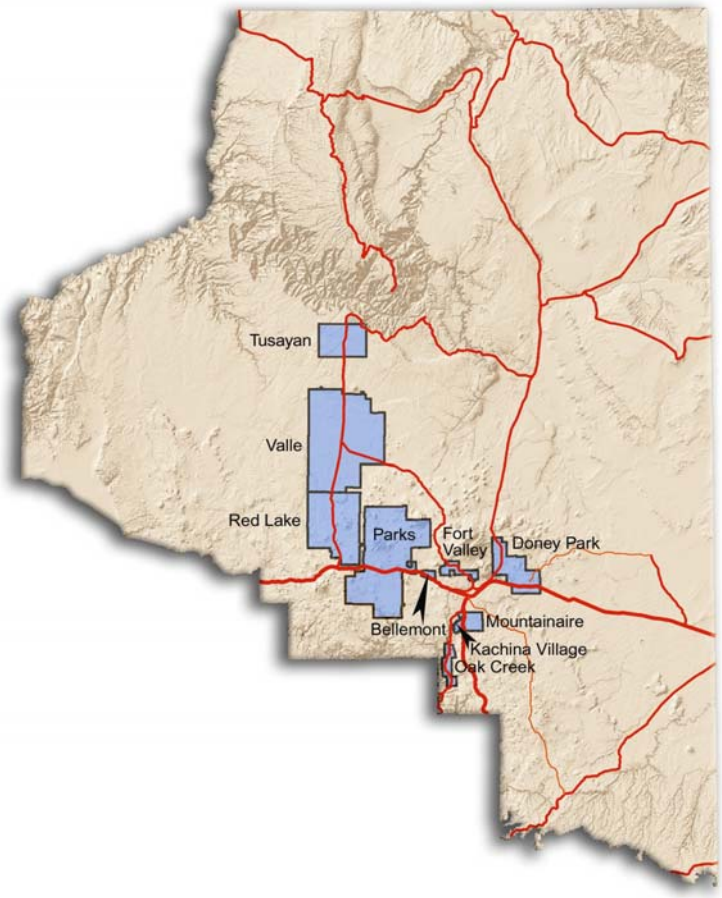
Williams

The City of Williams is located 30 miles west of Flagstaff on Interstate 40 at the base of Bill Williams Mountain in the Kaibab National Forest. The City was founded in 1882, incorporated in 1901 and was named for Bill Williams, a scout for the Santa Fe Trail and a local hunting party guide. The city includes 43.5 square

miles and sits at 6,780 feet in elevation. The City is well known for its connection with historic Route 66 as well as a gateway community for travelers to the Grand Canyon approximately 58 miles to the north. Previously, ranching and lumber were the primary economic forces, while today tourism provides the majority of revenue to the area. Over the last decade the City of Williams has grown from a population of 2,532 in 1990 to a population of 2,842 in 2000.

Communities With Area Plans

Area Plans in Coconino County



Bellemont

The Bellemont area is centered around the interchange on I-40 8 miles west of Flagstaff, and includes all private lands approximately 1.5 miles east and west of the interchange, and is bordered on the south by the railroad and the north by national forest lands. Camp Navajo, an Arizona National Guard base, is located south of the railroad. Topography is generally flat, and most private land is open meadow with ponderosa pine forest around the periphery. The area has a mixed-use zoning classification under the Planned Community (PC) Zone, which designates specific properties for heavy commercial, light industrial and residential uses. Existing commercial uses include a truck stop, motel, motorcycle dealership, and restaurant. Industrial uses include a paper-products converting plant, publishing company, cabinet shop, and cultured marble manufacturing plant. Residential uses include a 213-lot residential subdivision approved in 2001, and a 12-space mobile home park. Although utilities are available and access is good, a considerable amount of undeveloped property remains. Development was slow until the mid-1990s when activity started to pick up. Development constraints include floodplain areas affecting some properties and poor soils resulting in constraints with onsite wastewater disposal. There are two private water companies in the community, both of which are drawing from relatively shallow aquifers; the capacity of the aquifers is not known. The Bellemont Area Plan was adopted by the Board of Supervisors on July 1, 1985.

Doney Park, Timberline, & Fernwood

The Doney Park/Timberline/Fernwood area is the largest unincorporated community in the county and consists of about 60 square miles located northeast of Flagstaff extending from Camp Townsend at the southwest corner to Lenox Park at the north end and east to Winona. The area is notable for its large meadows, or parks, with ponderosa pine forest along the west and southern edges and piñon-juniper woodlands throughout much of the remainder. About 30 percent is privately owned, with the remainder under Forest Service jurisdiction. The predominant land use is large lot residential, with about 60 percent of the parcels being 2 ½ acres. Neighborhood commercial areas are located at a few of the major intersections. Growth has been fairly rapid over the last 20 years, with population increasing from about 3,500 in 1980 to 5,500 in 1990 and 8,000 in 2000, an annual increase of over 4 percent. The number of new homes constructed each year has varied from 60 to 100. Complete build-out of the area, which is forecast to occur around 2015, will result in a population of about 15,000. The Board of Supervisors adopted a County Area Plan and design review guidelines for the area in 2001, which was an update of a previous plan adopted in 1988. The intent of the Area Plan is to retain the large lot rural character and predominantly residential land uses.

Fort Valley

The Fort Valley area encompasses about 14 square miles and is located northwest of Flagstaff on both sides of Highway 180. The area extends from the city limits on Fort Valley Road out to Bader and Roundtree Roads. Route 180 is one of the most scenic corridors in the county offering spectacular views from both directions of the San Francisco Peaks. The southern portion of Fort Valley is characterized by ponderosa pine forest, and north Fort Valley consists of open meadows. About half of the land is private, and current zoning in most of the area is for 2-acre parcels. Population has grown from about 350 in 1980 to 500 in

1990 to about 700 in 2000. There are about 470 homes, and given current zoning, room for about a doubling of that number. Commercial uses exist at three nodes: one just north of the city limits; one near Schultz Pass Road; and the third at Snowbowl Road. The Board of Supervisors adopted a County Area Plan in 1990 that emphasized protection of the rural character and existing zoning. Fort Valley is one of the few areas of the county where most residents have their own well, and a concern about aquifer viability was one factor leading to the desire for low density development.

Kachina Village

Kachina Village is located on the west side of Interstate 17 approximately six miles south of Flagstaff. The planning area encompasses approximately 6 ½ square miles including Kachina Village, Forest Highlands Unit Five, and approximately four square miles of national forest land extending south to Kelly Canyon and west to Pumphouse Wash. Originally intended as a vacation home community in 1965, Kachina Village has evolved into a suburb of Flagstaff primarily occupied by full time residents. There is a mix of housing types ranging from mobile and manufactured homes to site-built single family residences and several duplex rental units. Existing commercial uses include a convenience store and real estate office. Recreational facilities include Raymond County Park and Pumphouse Greenway. Typical construction in the early years included modest cabins and trailers. More recent construction has typically included more substantial homes occupied by full time residents. According to the 2000 Census, there were 2,664 residents and 1,376 dwelling units in the Village. Kachina Village is nearly built-out with the exception of a handful of lots and a 36-acre parcel of undeveloped land. Forest Highlands Unit Five includes an 18-hole golf course and vacation homes in an exclusive gated community with very few full time residents. The area is heavily forested with ponderosa pine, and a large natural wetland area known as Dolan Meadow sits at the head of Pumphouse Wash, a major tributary and headwaters of Oak Creek. A County Area Plan and Design Review Overlay for Kachina Village were adopted in 1997.

Mountainaire

The Mountainaire area includes land east of Interstate 17 and south of the City of Flagstaff. This area is limited to five private inholdings within the National Forest including the Mountainaire subdivision consisting of 140 acres under medium density residential zoning, and surrounding properties under large lot rural residential zoning. Within this area the 2000 Census reported 556 housing units and a total population of 1,014. This area originally consisted of summer homes and has more recently converted to a year round community due to close proximity to Flagstaff. There have been problems with inadequate septic systems, water shortages and adverse road conditions, which continue to be addressed. A few parcels with commercial zoning have yet to be developed. The Area Plan identifies preferred conditional uses (primarily neighborhood services) from the County Zoning Ordinance for the Commercial General Zone. The natural environment is typical of the Flagstaff area with sections of dense ponderosa pine and open meadows. A County Area Plan and Design Review Overlay guidelines for the Mountainaire Community were adopted by the Board of Supervisors on December 16, 1991.

Oak Creek

The Oak Creek area includes both sides of Highway 89A from the corporate limits of the City of Sedona north to Pumphouse Wash south of Flagstaff. This area represents one of the few riparian habitats in the County and the Oak Creek Canyon Area Plan focuses on preservation of this precious resource. Oak Creek is designated a "unique water of exceptional circumstance" by the State of Arizona. There are a wide variety of housing types, property development standards, and commercial development in the Canyon. However, there is a recent trend of tearing down the older, smaller cabins to build new, larger houses that are changing the historic character of the Canyon. Occupants tend to live in the Canyon on a seasonal basis although year round inhabitants are becoming more common. Commercial uses vary from resorts and motels to restaurants, convenience stores, arts and crafts shops, as well as a trout farm. The Area Plan includes policies for development and redevelopment that address floodplains, slopes, and impervious surfaces. The Plan was amended in 1989 to address redevelopment and emphasizes maintaining the historic and environmental qualities inherent in the Canyon, while limiting human impact. The County has worked with the Forest Service in identifying private parcels in the Canyon which would be suitable for exchange for National Forest lands. A County Area Plan and Design Review Overlay for the Oak Creek Canyon were adopted by the Board of Supervisors on February 6, 1984 and amended in 1989.

Parks

The Parks area encompasses 265 square miles north and south of I-40 between Bellemont and Williams. Of the total area, approximately 30 square miles is private land, approximately one square mile is state trust land, and the remainder is national forest. The 30 square miles of private land consists of widely scattered sections intermixed with national forest land. The area is characterized by ponderosa pine forests, open prairies, and piñon-juniper woodlands punctuated by volcanic mountains. According to the 2000 Census, the population was 1,137. The community of Parks sits roughly at the center of the planning area, but resi-

dents tend to identify more with their immediate neighborhood community, such as Government Prairie, Spring Valley, Elk Springs, Pittman Valley, Maine Townsite, and Garland Prairie. Early settlement was primarily related to ranching and farming, and a distinctly rural character and very low density development remain hallmarks. Water is scarce, occasionally occurring in springs and shallow aquifers in a few locations, but effectively out of reach in the deep regional aquifer characteristic of most of the area. The County Area Plan was completed and adopted for the Parks area on September 17, 2001.

Red Lake

The Red Lake area extends north 14 miles from the Williams City limits. Highway 64 bisects the area with boundaries extending five to six miles to the east and west encompassing about 40,000 acres of private land within a 150 square mile area. The Highway 64 corridor provides views of surrounding mountains including Bill Williams, Kendrick, Sitgreaves, and the San Francisco Peaks. The area is typical of a high desert chaparral community with woodlands of ponderosa, piñon, and juniper, and was historically used for ranching activities. Several residential subdivisions were platted in the 1960s and early 1970s, and with the exception of subdivisions with 1- and 2-acre lots, the area is primarily zoned for 10 acre minimum parcel size. Water is one of the major factors affecting future growth in the Red Lake area, as there is no local water source. There are only two existing commercial uses along Highway 64 which provide services to travelers on their way to the Grand Canyon. Highway 64 is the primary travel route to the South Rim of the Grand Canyon and has some potential for scenic highway status. Thus the visual character of development along this corridor is of critical concern. A County Area Plan for the Red Lake Community was adopted by the Board of Supervisors on September 21, 1992.

Tusayan

The Tusayan area extends from the core community one mile north to the Grand Canyon National Park boundary, four miles south, and five miles on either side of Highway 64. This community has served as the gateway to Grand Canyon National Park since its inception and depends upon tourism for economic sustainability. The 2000 Census reported that there were 562 residents in the community and 313 housing units. Tusayan presents a unique situation with a restricted private land base and extremely high land values being held by only a few property owners. Significant issues for the community include limited and expensive water, limited housing for employees, and developing a sense of community. This area has seen major changes in the overall appearance of the community since adoption of the Design Review Overlay. Tusayan has also become a leader in re-use of treated effluent for non-potable needs. A County Area Plan and Design Review Overlay for the Tusayan Community were adopted by the Board of Supervisors on June 19, 1995. The vision as stated in this Area Plan is for Tusayan to be recognized as a model for environmentally conscious communities, as well as a location from which tourists base their Grand Canyon experience.

Valle

The Valle area extends from the Red Lake Plan boundary at Howard Lake north to the Kaibab National Forest boundary, and approximately 7 miles west and 8 miles east of Highway 64. The area is characterized by high desert terrain with vast, scenic vistas in all directions. The Valle area is sparsely populated in relation to the total land area (approximately 300 square miles). In 1990 the population consisted of 123 residents, with the 2000 Census reporting 553 residents. Population growth can largely be attributed to a new manufactured home park at the Valle Airport as well as increased development in Woodland Ranch. These developments primarily provide housing for employees of businesses in Tusayan. The only commercially developed area is in the vicinity of the junction of Highway 180 and 64, which include several trading posts, a motel complex with restaurant and convenience market, mini storage, and a small amusement park. Valle businesses rely primarily on tourists traveling to the Grand Canyon. Although the area is very sparsely populated, there are over 8,000 platted subdivision lots within Valle as a result of subdivisions created in the 1960s and 1970s. Growth has been limited by a lack of basic services such as phone, water, and electric, and by an absence of a local economy. Outside of Grand Canyon subdivision, most private land is zoned 10 acre minimum parcel size, allowing single family residential use and agricultural ranching uses. A County Area Plan for the Valle Community was adopted by the Board of Supervisors on October 18, 1999.

Communities Without Area Plans

Alpine Ranchos

This community is located approximately 15 miles northeast of Flagstaff between Doney Park and the Navajo Reservation. The area is a checkerboard of state trust lands and private 40-acre parcels, some of which have been split into 20- or 10-acre parcels. This community is separated from the Doney Park community by Forest Service land and is categorized as very remote, rural residential with limited utility infrastructure available. The natural environment is characterized by cinder cones, piñon-juniper vegetation, and spectacu-

lar views towards the Hopi Reservation. Alpine Ranchos represents an area of the county like many others where residents have a sense of camaraderie in their desire to be left alone.

Blue Ridge, Happy Jack & Clints Well

This area includes three place names but has been more recently categorized as the Blue Ridge area stemming from the Blue Ridge Ranger District. Blue Ridge is located in the southeastern portion of the county, and is accessible via Lake Mary Road/Forest Highway 3 and Highway 87. The natural environment includes areas of dense ponderosa pines and open park meadows along the edge of the Mogollon Rim. Residential subdivisions in the area date back to 1963, with many recent additions. Subdivisions include Clear Creek Pines, Starlight Pines, Blue Ridge Estates, Pine Canyon Estates, Tamarron Pines, and Mogollon Ranch. The earlier subdivisions are under zoning that permits both manufactured and site built homes, however, newer subdivisions allow only site built homes and require design review approval by homeowner's associations. Commercial uses are extremely limited and are oriented towards tourists traveling in the area.

Gray Mountain

This area is located approximately 40 miles north of Flagstaff along Highway 89. The natural environment is rural high desert. The majority of uses in the area are tourist-oriented including a hotel, restaurant, curio shop, and convenience market with gas sales. As of 2002, a cellular tower has also been located in the area. Surrounding areas include private ranchland and state trust land with the Navajo Reservation to the north.

Greenehaven

Greenehaven consists of 491 acres bordered on the north by the Arizona-Utah state line. The area is located on the western side of Lake Powell and has views of Wahweap Bay, Castle Rock, Lone Rock, and other features along the Bay. Development of this community began in 1980 with a rezoning to Planned Community and creation of a master plan for a mixed use community encompassing resort, residential, commercial, and light industrial uses. Originally state trust land, the area is now entirely surrounded by Glen Canyon National Recreation Area lands. The mobile home portion of this development was in existence prior to development of the surrounding area for single family home construction. Since the initial master plan was submitted, areas have been subdivided for single family homes, condominiums, and commercial uses. Single family homes are the most prevalent form of development with the exception of the mobile home subdivision. Attached town homes have recently been built and the commercial areas have seen only development of a convenience market with gas sales and a boat storage facility.

Forest Lakes

The Forest Lakes area consists of the 11-unit Forest Lakes Estates subdivision located in the southeast corner of the county in the area once known as Mertzville. The subdivision has 975 lots platted between 1965 and 1970, with a majority of the subdivision under one acre minimum residential zoning and commercially-zoned properties along Highway 160. Commercial uses in the area include RV parks, a restaurant, a convenience store and gas station, and rental cabins oriented to recreational activities. Zoning in 2002 allowed for both manufactured and site-built housing. Historically, the area consisted of travel trailers and modest site-built cabins for summer use by Phoenix area residents. Recently, land values have significantly increased and there has been an increase in larger site-built homes with year round residents. Some residents have requested an Area Plan to incorporate concerns for law enforcement, fire protection, and the provision of other community services, as well as to control future land use.

Kaibab Estates West

This area is located in the western portion of the County approximately 50 miles west of Flagstaff off Interstate 40 and just north of the community of Ashfork, which is located in Yavapai County. Development consists of a 12,000-acre ranch that was divided into 1- to 5-acre parcels in the 1960s. Slightly rolling terrain with scrub and juniper as the primary vegetation types characterizes the natural environment, which was zoned and planned for areas of commercial, multi-family, and rural residential. Development has not occurred as was originally planned, however. There is little to no commercial development, other than a few stone yards that operate quarries outside of the subdivision, and a few cottage industries including feed sales. Many of the commercial and multi-family zoned parcels have been rezoned to agricultural residential. The subdivision does provide some electric and phone utilities, roads are cindered, onsite septic systems are used, and water must be hauled from nearby Ashfork.

Mormon Lake

An Area Plan was initiated in conjunction with the Coconino National Forest in 1997 for the Mormon Lake community but it was never completed due to concerns of area property owners. The plan was to focus on

a 15 square mile area west of Lake Mary Road, including the southern and western portions of Mormon Lake Road and extending one and one half miles north of the lake. Mormon Lake Village is located at the south end of Mormon Lake, a natural drainage and ponding area approximately 30 miles south east of Flagstaff. The lake itself is seven miles long running north and south and three and one half miles wide, and when full, is the largest natural lake in Arizona. Large portions of the land in this area are impacted by floodplain and wetland requirements. The Mormon Lake area consists of a limited private land base surrounded entirely by National Forest Service lands. Uses in the area include a lodge/restaurant, trailer park, summer cabins and residential uses, youth camp, and other recreational uses. Subdivisions in the area date back to 1927 when the Mormon Lake Townsite was platted.

Munds Park

The Munds Park community is located approximately 15 miles south of Flagstaff on both sides on Interstate 17. Development in the area began with the Northernaire subdivision in 1958 and continued with the Oakwood subdivision in 1967 and the Pinewood subdivision between 1968 and 1974. There is a mix of housing types including areas designated for manufactured housing and areas set aside for site-built and modular homes. These residential subdivisions were created around a golf course within the pines and surrounded by national forests. A commercial corridor runs through the community along Pinewood Boulevard on the east side of the interstate and includes a motel, gas stations, post office, realty offices, restaurant, and plant nursery. Along the west side of the highway separated from residential subdivisions by I-17 are an RV park, church, restaurant, and gas station.

Tuba City & Cameron

Tuba City and Cameron are unique communities because they contain small private inholdings with historic trading posts on the Navajo Nation. The Cameron trading post still exists where it was constructed in the early 1900s after construction of a suspension bridge across the Little Colorado River. The total inholding includes just over 100 acres of land. The trading post was originally used by local tribes in order to barter goods. Over time as interest grew in the Grand Canyon and as roads in the area improved, Cameron became popular for other travelers. Today the site includes the original trading post plus a lodge, RV park, restaurant, post office and gift shop. Tuba City, located in the westernmost portion of the Navajo Nation near the junction of State Highways 264 and 160 was originally settled by Mormons. In 1903 it was discovered that the town site was built on Indian land and the government bought all improvements except for an 80-acre parcel of land. This private land has since been subdivided into the Babbitt's Moenave Center. Several uses occur within this subdivision including a mobile home park, concrete batch plant, offices, motel and restaurant, and service commercial uses.

Winslow West

There are two developments in this area situated near the west end of the City of Winslow. The first is Hopi Hills subdivision, which was created in the late 1960s early 1970s. The subdivision abuts the Coconino and Navajo County line south of I-40 approximately one mile from the City of Winslow. The natural environment is characterized as a dry upland desert with sparse vegetation, with the subdivision consisting of 58 acres of land divided into 235 lots averaging 7,000 square feet. Only one unit of the proposed two-unit subdivision was approved due to the requirement that roads be constructed prior to submittal of final plat. The area is designated for mobile and manufactured homes. The second development includes Turquoise Ranch which consists of 40-acre parcels in the General Zone located near Interstate 40 and Highway 99 about 7 miles west of Winslow and about 50 miles east of Flagstaff.

Vermilion Cliffs, Marble Canyon, Cliff Dwellers & Badger Creek

These areas are located on the Arizona Strip approximately 120 miles north of Flagstaff at the edge of the Vermilion Cliffs Wilderness Area. All four sites are accessed via Highway 89A which is also a designated scenic route. Marble Canyon includes 60 acres north of Highway 89A and 113 acres south of the highway surrounded by lands managed by the National Park Service and Bureau of Land Management. Only a small portion is developed with a motel, restaurant, trading post, post office, gas station, air strip, and residences for managers and employees. Vermilion Cliffs is where Lee's Ferry Lodge is located which includes 10 acres in the Resort Commercial Zone developed with a lodge, restaurant, fishing supply and jewelry/metal art store and employee housing. Badger Creek is located adjacent to Vermilion Cliffs and encompasses 38 acres of land split into 27 parcels ranging in size from one to three acres primarily developed with residential single family homes, and a commercial warehouse used for a local river outfitter. Cliff Dwellers includes: a 24-acre parcel in the Resort Commercial Zone occupied by a lodge, restaurant, fly shop, gas sales and employee housing; a river company warehouse; three large undeveloped parcels of land surrounding the lodge; seven 40-acre parcels of which one has been developed; the Cliff Dweller Homeland subdivision consisting of six undeveloped 5-acre lots; and one 20-acre parcel occupied by a single family residence.

Private Golf Communities

As of 2002, there were two private golf course communities located within the County—Forest Highlands and Flagstaff Ranch. Forest Highlands was developed between 1986 and 1995 on approximately 1,100 acres with 820 homesites. The development is located approximately five miles south of Flagstaff off Highway 89A. The natural environment is typical of the Flagstaff area with large stands of ponderosa pine and open meadows. The community includes guarded access, two 18-hole golf courses, two clubhouses, a health and fitness center, individual neighborhood parks as well as its own trail system. Flagstaff Ranch is a 410-acre community about five miles west of Flagstaff off old Route 66 and I-40 and includes guarded access, golf course, clubhouse, community center, 210 custom homesites, 83 patio homesites, and 60 condominium units. This community has increased fire safety by developing a fire mitigation plan that regulates site development and building materials through the homeowner's association and local fire department.

Native American Tribes

Navajo

Only a small portion of the total Navajo Nation, originally created in 1868, is located within Coconino County. The entire Navajo Nation encompasses a total of 14 million acres and is home to over 200,000 people. That portion of the reservation located within Coconino County represents 27.7 percent of the reservation's total land area. The 2000 Census reported that there were 23,216 tribal members residing in the Coconino County portion of the reservation with a total of 5,736 occupied dwelling units. The Navajo, or Diné in their native tongue, are related to the Athapascan language group. The Diné People were not identified as the Navajo until the 18th Century. Farmers and herders of Northern New Mexico who migrated around the 15th Century are the ancestors of today's Navajo Tribe. The Navajo practiced a nomadic hunter/gatherer lifestyle until the 19th Century when lifestyle dependence shifted to herding and maintaining livestock introduced by Spanish explorers. Today the tribe's economy has diversified but varies from location to location. In some areas, especially those in Coconino County, ranching continues to provide a livelihood for many tribal members.

In 1989 the Navajo Nation purchased the 491,000-acre Boquillas Ranch located in western Coconino County directly adjacent to the Hualapai Reservation. The land remains in fee simple ownership and has been a working ranch since purchase. To date no requests have been made for these lands to be reclassified as tribal trust lands. It is possible they can be sold for development in the future, which could have a significant impact on the amount and type of development that occurs within that area of the county.

The Navajo Nation is unique to the tribes within Coconino County due to its vast size and style of tribal government. The tribal government is currently headquartered in Window Rock, Arizona with an 88-member council representing 110 separate chapters. There are 13 chapters that are either entirely or partially located in Coconino County. There is a potential for more control to shift from the Window Rock council directly to the individual chapters due to the Local Governance Act of 1998. This Act allows each chapter to develop its own government after developing an approved management system, and to regulate land use with an approved comprehensive plan. Many chapters within Coconino County are working on such plans in order to establish local control. This process has spurred additional communication and coordination of resources between individual chapters and the county.

Hopi

The Hopi are the westernmost Puebloan Indian tribe, an ancient culture and probably related to the earliest inhabitants of what is now Coconino County. The tribe settled on three remote mesas at the southern edge of Black Mesa because of water availability and the safety this area provided. The Hopi have occupied areas within the County since at least 500 to 700 AD. The village of Oraibi is the oldest continually occupied village in the United States and has been in existence since 1100 AD. Today the Hopi reservation is surrounded entirely by the Navajo Nation and falls over portions of both Navajo and Coconino counties. The reservation makes up 4.1 percent of the total land area within Coconino County. The 2000 Census reported that 1,003 tribal members of a total population of 6,815 resided within the Coconino County portion of the reservation. The Hopi are known as agricultural people and have been called the world's greatest dry-land farmers. It is believed that early settlers survived in this arid climate based on farming techniques copied from the Hopi. Beyond farming, the tribe is also known for outstanding artisans making cloth, jewelry, pottery, and Katsina dolls. In the early 2000s, the Hopi Tribe was presented with $50 million from Congress for purchasing additional land. A maximum of 500,000 acres purchased with this money can be taken into trust status, excluding anything within a five mile buffer of an incorporated town or city. To date the tribe has applied to Congress for 300,000 acres to be taken into trust status. Lands purchased and included in this request consist of a mix of both private and state lands located in the County southeast of Flagstaff. If and when these lands are taken into trust status, development would no longer be subject to county regulation.

Havasupai

The Havasupai reservation is the only one entirely within Coconino County and is located at the southwest corner of Grand Canyon National Park. The village of Supai is the tribal center of the 188,000-acre reservation, which was created in 1880 and significantly enlarged in 1974. The reservation is composed primarily of canyon lands on the south side of the Grand Canyon and occupies approximately 1.4 percent of Coconino County. The 2000 Census reported there were 503 Havasupai that remain on the reservation with approximately 160 dwelling units. Havasupai are known as traditional guardians of the Grand Canyon. The name Havasupai translates to "people of the blue green waters," which is derived from the four waterfalls located nearby that maintain a bluish green color from limestone dissolved in the water. Historically, the Havasupai farmed, ranched and hunted on the plateau in summer and moved into the canyon during winter where they grew corn, beans, and squash. Today the tribe is the largest employer on the reservation and the main occupation is working for tribal enterprises related to tourism.

Hualapai

The Hualapai reservation was created in 1883 and includes a million acres along 100 miles of the Colorado River and Grand Canyon. The reservation extends into three counties including Coconino, Yavapai, and Mohave. That portion of the reservation located in Coconino County represents approximately 4.7 percent of the County. The tribal center of the Hualapai reservation is Peach Springs in Mohave County. The 2000 Census reported there were 1,353 Hualapai on the reservation with only two tribal members identified as residents of the Coconino County portion of the reservation. The Hualapai are considered part of the Pai, meaning "people," which include the Havasupai and Yavapai. The Pai people are related to the Yuman language group, which were typically located on or near the Colorado River. The Hualapai Culture dates back to 600 A.D. Today the principal economic activities for tribal members include tourism, cattle ranching, timber sales, and arts & crafts. Tribal, public school, state, and federal government services provide the majority of full time employment.

Kaibab-Paiute

The Kaibab-Paiute reservation covers over 120,000 acres on the Arizona Strip north of the Grand Canyon along Kanab Creek. There are five villages within the reservation boundaries including Kaibab, Steam Boat, Juniper Estates, Six Mile, and Red Hills. The Kaibab reservation falls over portions of both Mohave and Coconino Counties, in addition to Southern Utah. That portion of the reservation located in Coconino County represents less than 1 percent of the County. The 2000 Census reported only one tribal member as a resident of the Coconino portion of reservation lands. The Kaibab-Paiute are members of the Southern Paiute Nation, which are part of the Uto-Aztecan language group. The Southern Paiute people moved to this area around 1100 AD from the Great Basin. Today the principal economic activities for this tribe are centered on tourism and livestock.

San Juan Southern Paiute

The San Juan Southern Paiute are a newly recognized tribe with approximately 250 members currently residing in and around Tuba City on the Navajo Reservation. The tribe is currently in the process of petitioning the Bureau of Indian Affairs (BIA) for tribal lands. For years the San Juan Southern Paiute have been administratively considered part of the Navajo Tribe but are culturally distinct from their Navajo neighbors. The Southern Paiute traditional territory included southern Nevada, northern Arizona, and southern Utah until they lost their land in the 1800s. The tribe was a hunter-gatherer society that later developed farming techniques. Today tribal members depend on raising livestock and subsistence farming of a small number of crops. The tribe is also known for its hand-woven baskets and traditional weaving techniques. The future location of any tribal trust lands could have an impact on the County depending on their location and the types of uses that may occur on site to support the tribe.

Appendix D: Water Resource Considerations

Growing Smarter Requirements

Arizona State Legislation that influences planning for water in Coconino County includes the "Growing Smarter" Act of 1998 and "Growing Smarter Plus" Act of 2000. Both of these acts included requirements for an Environmental Planning Element for county comprehensive plans. ARS § 11-821.C.3 requires counties with a population of over 125,000 to address planning for water resources, and makes it optional for counties under that threshold. The 2000 census for Coconino County was 116,320 so this element is not mandatory. The County will undoubtedly face compliance with this requirement in the next update to this plan if the same population thresholds apply. Because of the importance of water, The County made a decision to include a water element in this plan even though not required.

Some of the requirements of this statute will require further research. The statutory requirement for an analysis of how future growth projected in the County plan will be adequately served by the legally and physically available water supply (or a plan to obtain additional necessary water supplies) will require a separate, more detailed study. Some of the information on existing systems is compiled in this appendix. There are also a number of ongoing studies that could help in providing detailed information on available surface water, groundwater, and effluent supplies, as well as more reliable methods for demand forecasting (projections of future demand that can be made on a system-wide or customer-class basis).

Arizona Groundwater Management Act

The Arizona Groundwater Management Act (GMA) of 1980 was, in part, the result of legal questions over transport of water and overdrafting of groundwater in the southern part of the state, and thus the law included specific regulatory agendas for those areas. The law created four initial Active Management Areas (AMAs) where the most stringent restrictions apply, and two Irrigation Non-Expansion Areas (INAs) in rural farming areas where groundwater overdraft was of concern but was less severe than in AMAs. An Irrigation Non-Expansion Area is a geographical area that has been designated as having insufficient groundwater to provide a reasonably safe supply for the irrigation of the cultivated lands at the current rate of withdrawal. Since adoption of the GMA, one additional AMA and one INA have been established.

AMAs are created through legislation, by petition of property owners within a defined area followed by a vote (ARS § 45-415), or by declaration of the Director of ADWR pursuant to statutory criteria (ARS § 45-412.A). The primary purpose of Arizona's five AMAs has been to address significant overdraft in these areas with a goal of "safe yield" by the year 2025. Per state standards for management areas, safe yield is defined as the "long term balance between the annual amount of groundwater withdrawn in the AMA and the annual amount of natural and artificial recharge."

Significant aspects of AMAs include establishing groundwater rights and permits, prohibiting new agricultural irrigation, creating water management plans including mandatory conservation measures, a requirement for measuring and reporting water pumped from all non-exempt wells, and payment of a management fee for all groundwater withdrawals. A sixth key aspect of AMAs is the requirement for proving an "assured water supply" for any new subdivision. The AMA standard for assured water supply requires a developer to demonstrate that the water source is of sufficient quantity and quality to sustain the proposed development for 100 years, that the proposed use is consistent with the management plan and achievement of the AMA management goal, and that the water provider has the financial capability to construct water supply systems to serve the proposed development.

Assured vs. Adequate Water Supply

There is a significant difference between the AMA requirements of proving an assured water supply for any subdivision, and the application of an adequate water supply standard for areas outside of an AMA. The primary difference is that it is not necessary to actually prove an adequate water supply in order to subdivide land outside of an AMA, it is merely an advisory process. To obtain a certificate of water adequacy outside of an AMA, similar criteria are used regarding physical availability, quality, and financial capability. However, subdivisions may proceed with an inadequate supply, although notice of inadequacy must be included in sales materials.

Some counties have adopted ordinances that require subdividers obtain a Designation or Certificate of Water Adequacy, which states that water supplies will be available for 100 years. At least two issues would affect Coconino County's ability and/or desire to pass a similar ordinance. First, groundwater below 1,200 feet is precluded from being certificated or designated as an adequate water supply under the *Water Adequacy Rules*. This requirement affects a significant part of the county because water level commonly exceeds this depth. In addition, requiring developers to prove adequacy could motivate them to circumvent the subdivision process, resulting in more lot splits.

Rural Arizona Watershed Initiative

Funded annually by the state legislature, the Rural Arizona Watershed Initiative was started in 1999-2000 to help rural areas finance studies, projects, and programs related to groundwater resources. By August 2002, seventeen watershed groups had been created pursuant to this program. An "alliance" includes representatives from each of these groups to keep informed on a statewide basis. Four studies include watersheds that are at least partially within Coconino County. The intended outcome of these studies is the creation of a database and comprehensive assessment of existing geologic, hydrologic and related data, and an understanding of technical information regarding the inter-relatedness of geologic and hydrologic science. The intent is that with this information, better forecasting can be done to assess the supply and demand situation.

The Coconino County Board of Supervisors through this initiative created the Coconino Plateau Water Advisory Council in 2000. The Council is comprised of local agencies and jurisdictions that manage land within the Coconino Plateau Watershed, which encompasses roughly the central area of Coconino County. The general geographic boundaries focused on by the Council are described as "being roughly defined" as follows: bordering the Colorado River on the north, Cataract Canyon drainage on the west, the cities of Flagstaff and Williams on the south, and the Western Agency of the Navajo Nation on the east. ADWR, Grand Canyon National Park, Coconino and Kaibab National Forests, USGS, Havasupai Tribe, Navajo Nation, the cities of Flagstaff, Williams, and Page, and the Tusayan community have entered into a Memorandum of Understanding (MOU) to pursue a regional water study. Other entities continue to express interest and be incorporated into the council.

There is a technical subcommittee of this council whose role is to provide oversight for a study of the current status of water supplies and to identify alternatives that could be implemented to help meet future demands. The Bureau of Reclamation is the lead agency on this study, which is intended to be a comprehensive appraisal of all water resources in the Coconino Plateau Region with demands projected to 2050. The study will also include alternatives for meeting demands including, but not limited to, conservation, water demand-side management (the measures, practices, or incentives that water utilities use to reduce the level of services or to change demand patterns for services), effluent reuse, gray water, and augmentation through additional supplies.

The *North Central Arizona Water Demand Study Phase I Report,* commissioned by the Council and completed in June 2002 (by the Rocky Mountain Institute and Planning & Management Consultants, Ltd., Snowmass, Colorado), provides extensive information about existing water resources, efficiency and conservation measures, and alternative supplies within the study area. The *Phase I Report* expresses concerns with the way demands have been calculated in previous plans and reports, and sets forth suggestions and a plan for more reliable demand forecasting methodology. A Phase II report is expected to continue with additional data collection and further analysis. These reports, along with other reports and further studies for this region, are to be incorporated into the Bureau of Reclamation study.

Other Watershed Initiative efforts that affect water in Coconino County are the Upper and Middle Verde Watershed, Mogollon Highlands of Central Arizona, and the Arizona Strip. Coconino County areas included in the Upper and Middle Verde Watershed are the areas north of Ash Fork, and areas around Parks and Flagstaff that drain into Sycamore Creek and Oak Creek. The Mogollon Highlands includes areas around Blue Ridge, where the County has experienced significant growth since the mid 1990s, and Forest Lakes Estates at the southernmost tip of the County. The Arizona Strip includes roughly the area from Marble Canyon to Fredonia.

Surface Water Issues

Surface water laws differ from groundwater laws. To obtain a surface water right, the applicant must propose a beneficial use, and approval is subject to any prior appropriation claims by others. Beneficial uses are defined under ARS §45.181 as a use of water that provides a benefit and includes domestic, municipal, irrigation, stock watering, water power, recreation, wildlife (including fish), artificial groundwater recharge, and mining uses. In 1977, the legislature passed the *Stockpond Water Rights Act* to recognize previously unrecorded stockponds—ponds that store no more than 15 acre-feet of water for livestock and wildlife use. This act addresses the surface water diversions associated with these ponds, diversions that may otherwise augment the supplies of downstream users. The law distinguishes surface water from sheet flow, or localized runoff. This distinction is important because surface water rights typically do not apply to sheet flow.

Tribal Water Rights

A related regional issue is Indian water rights, which ADWR considers one of the most important issues in Arizona today. The Little Colorado River system, which includes areas in Coconino County, is undergoing a lengthy adjudication process, which is addressing claims to water rights by the Hopi and Navajo tribes, and others. A related issue is tribal reliance on certain sources of water. This became a significant issue with the proposed Canyon Forest Village development adjacent to Tusayan in 1999 and 2000. Of critical concern to the Havasupai was the impact significant groundwater withdrawal would have on springs in the Grand Canyon where they make their home.

Water Systems Summary

It would be impossible to review all of the water systems in the County in this Plan. However, there are some significant systems that are worthy of note for either their uniqueness or variety in service. Municipal systems are included in this review even though municipalities are not included in the jurisdictional authority of the Comprehensive Plan.

As a historical reference, the following table provides data from the *Arizona Water and Wastewater Residential Rates 1999 Survey* by the Water Infrastructure Finance Authority of Arizona.

The textual information on the subsequent pages is derived from more current studies and informal research by staff of the Community Development Department.

Water Suppliers Summary Table: 1999 Survey of Residential Rates

Owner	Owner-ship Type	Watershed	Reve-nue $1000/ year	Resi-dential users	Other users	Total users	Total gal water sold (mills.)	Gals sol d (1000s) per Cust.	Base $/ month	Charge 7750 gals $/ month	Total $/ month
Arizona Water Company / Pinewood	Investor	Verde		All Div. Counsl.		0			$16.21	$26.57	$42.78
Bellemont Water Company	Investor	Verde	$41	2	5	7	10	1457	$20.00	$14.34	$34.34
Clear Creek Pine Community Protection Association	Other	NA	$7	60	-	60	no report		$5.83	$-	$5.83
Doney Park Water S/W Avg-Blk 2	Investor	Lower Little Colorado	$1,511	2478	107	2585	187	72	$18.75	$38.55	$57.30
Flagstaff	City	Lower Little Colorado	$10,374	13377	1731	15108	NA	NA	$6.48	$23.28	$29.76
Flagstaff Ranch Water Company, Inc.	Investor	Lower Little Colorado	$18	30	-	30	3	92	$18.00	$19.91	$37.91
Forest Highlands Water Company	Investor	Verde	$298	499	17	516	32598	63175	$20.00	$15.50	$35.50
Fredonia	Town	Colorado River	$179	528	45	573	NA	NA	$16.50	$-	$16.50
Grand Canyon Caverns	Investor	Colorado River	NA	NA	-	0	NA	NA	$5.00	$16.88	$21.88
Greenehaven Water Company	Investor	Colorado River	$34	156	2	158	13	83	$9.00	$10.13	$19.13
Heckethorn Water Company	Investor	Lower Little Colorado	$18	35	8	43	5	113	$25.25	$18.76	$44.01
Junipine Community Property Owners Association	Investor	Verde	NA	NA	-	0	NA	NA	$-	$19.38	$19.38
Mormon Lake Water Company	Investor	Lower Little Colorado	$42	140	1	141	2	16	$26.00	$-	$26.00

Owner	Owner-ship Type	Watershed	Reve-nue $1000/ year	Resi-dential users	Other users	Total users	Total gal water sold (mills.)	Gals sol d (1000s) per Cust.	Base $/ month	Charge 7750 gals $/ month	Total $/ month
Mountain Dell Water	Investor	Lower Little Colorado	$39	93	-	93	6	62	$19.00	$28.69	$47.69
Oak Creek Utility Corporation	Investor	Verde	$10			0	0		$18.00	$19.38	$37.38
Page	City	Colorado River	$600	2284	349	2633	NA	NA	$4.00	$5.94	$9.94
Ponderosa Utility Corporation	Investor	Verde	$186	496		496	23	47	$17.25	$21.70	$38.95
Starlight Water Company, Inc.	Investor	Lower Little Colorado	$47		-	0	NA	NA	$13.25	$10.62	$23.87
Stoneman Lake Water Company	Investor	Verde	NA	NA	NA	0	NA	NA	$10.00	$5.25	$15.25
Tusayan Water Development Association, Inc.	Other	Colorado River	$461	2	12	14	24	1743	NA	NA	NA
West Village Water Company	Investor	Lower Little Colorado	$37	52	14	66	NA		$26.00	$39.14	$65.14
Williams	City	Colorado River	$583	851	228	1079	NA	NA	$6.21	$20.99	$27.20
Winslow West Water Company	Investor	Lower Little Colorado	$2	5	-	5	NA		$6.00	$2.38	$8.38
Totals			**$14,487**	**21088**	**2519**	**23607**	**32871**	**66860**	**$306.73**	**$357.39**	**$664.12**

Municipal Water Systems In Coconino County

Flagstaff

The City of Flagstaff domestic water supply comes from three sources—Upper Lake Mary, the Inner Basin of the San Francisco Peaks, and groundwater wells. Upper Lake Mary has a capacity of five billion gallons of surface water, and the reliable annual yield is 855 million gallons. The Inner Basin is considered a surface water supply with shallow wells capturing snowmelt with a reliable annual yield of 241 million gallons. Groundwater is pumped from six wells near Lower Lake Mary, ten wells in the Woody Mountain well field, and two wells on the city's east side. Water is 1,000-2,000 feet deep, and the reliable annual production capacity is 3,554 million gallons. There are three standpipes for private and commercial water haulers. Standpipe sales in 2000 totaled less than 1 percent of total consumption for the City.

The City also has reclaimed water available for sale. In addition to water lines that distribute it to limited public facilities in the city such as parks and school playing fields, there are hydrants located for haulers as well. Some of the proposed future uses of the reclaimed water include recreational activities such as snowmaking for skiing at Snowbowl and winter time filling of Lake Mary for fishing.

Williams

Williams has historically relied on surface water reservoirs, Dogtown Reservoir, Kaiabab Lake, Cataract Lake, City Dam, and Santa Fe Dam, but in 2002 these reservoirs were down to 8 percent of capacity and the City drilled wells to meet demand. The wells are at a depth of over 3,000 feet. Due to the increased costs of obtaining and providing water the City has raised the costs to both city residents and haulers. The City has instituted a card system and limited the number of cards available; only previously existing customers were allowed to obtain a card. City residents had been subsidizing county residents who were purchasing and hauling water, but in 2003 the City raised its price for water from $6 for the first 1000 gallons and $3 per 1000 after that to $17.95 per 1000 gallons.

Page

The City provides all water services in Page, as well as providing treated water to the adjacent LeChee Chapter of the Navajo Nation. At the present time, Page obtains all its water from Lake Powell via intakes located on the dam approximately 250 feet below the water's surface. Four pumps move the water 1,200 feet uphill via a single water line to the city's water filtration plant. The capacity of the Lake Powell pumps is about 5.3 MGD, somewhat less than the drinking water plant capacity of roughly 6 MGD. The distribution system includes 4.5 MG of storage capacity for treated water. Some of the treated wastewater evaporates in the storage ponds; most is sent to the municipal golf course for irrigation use. There is no known rainwater harvesting or graywater reuse in Page.

Fredonia

In 2003 there were 540 users on the City of Fredonia's water system. The City receives its potable water via a 12-mile pipeline from Water Canyon, Utah. Most of the area's surface water is collected in the winter months (snow pack) and subsequently stored in the City's 25 million gallon reservoir. Based on an estimated 2 percent annual growth rate in the number of users, the City is in the process of using Community Development Block Grant funds to upgrade the current pipeline by installing a secondary system for a culinary water supply. The City also has plans to build a second reservoir for an additional 25 million gallons of storage capacity. Aside from residential users, USFS is the largest user of the City's water supply during times of forest fire. Construction companies, contractors, and ranchers make up the remaining user list. The Fredonia Town Council and the community Water Board host conservation education programs twice a year.

Sedona

The City of Sedona is served by a private water company (Arizona Water Company) and the source is wells.

Unincorporated Community/Area Water Supply

Unincorporated Flagstaff Area systems

The Heckethorn Water Company, Mountain Dell Water, Inc., and West Village Water Company provide service to County islands within the City of Flagstaff corporate limits (see descriptions below). Pine-Del, which is a subdivision just south of the City's boundaries, is actually served by city water. It is currently the city's position that new service will not be provided to any county islands or areas outside the city limits without annexation. This is significant for areas that are being developed just outside the city limits, such as the Lockett Ranches property off Highway 180 and northwest of Buffalo Park. This area is being primarily developed through the County lot split process (although three tracts have gone through a subdivision platting process). The ultimate number of lots could be about 225 with most being served by shallow onsite wells.

Within the greater context of Flagstaff, Heckethorn Water Company is a small water supplier. The Company maintains one well with a system storage capacity of 16,000 gallons. There are about 44 customers served by this company with no plan for system expansion.

Mountain Dell Water, Inc. serves about 80 residential customers in a small county island and a few homes in the City of Flagstaff not served by the municipal system. The system is fed by two wells, each at about 1,300 feet, with a combined capacity of about 40,000 gallons. As the area is mostly built out, there are no plans for expansion of the water system. The Mountain Dell Homeowners' Association has been active in promoting water conversation among the system's users.

The West Village Water Company maintains 62 water system connections—34 residences, 18 businesses, and 10 standpipes. Operating exclusively from one 1,620-foot deep well, the system maintains a capacity of 98,000 gallons. From the standpipes, the water company sells only to long standing customers, and while the opportunity exists, the company is not presently looking to expand service.

Doney Park

Doney Park Water provides water to a majority of area residents and businesses. Some residents choose not to pay for line extensions and then haul water, and there are very few individual wells due to depth to water. DPW has six wells ranging in depth from 1,581 to 1,781 feet, There are 29 storage tanks with a total capacity of 4 million gallons (June 2002 Phase I plan). Doney Park Water has calculated its ability to provide service within their service boundaries based on the County's current zoning, and thus the ability to consider rezonings that would rely on this water system are further restricted.

Flagstaff Ranch Water Company

The Flagstaff Ranch Water Company serves an area that was rezoned to Planned Community in 1983. It is adjacent to the City of Flagstaff's western boundary. Shortly after the rezoning the water system was developed with a single well and 595,000 gallon storage tank. The area served includes Westwood Estates (a total 80 lots that are not all currently developed), Flagstaff Ranch Golf Club (master planned residential golf course community-525 residential units approved), and the Flagstaff Ranch Business Park between I-40 and Route 66. There are currently limited industrial uses in the business park, but there is the potential for additional industrial and for highway commercial uses. Treated wastewater effluent will be used on the golf

course, with estimates that the effluent will provide 10-15 percent of irrigation needs. A surface drainage system to direct runoff to golf course has also been integrated into the design.

Forest Highlands

Forest Highlands Water Company serves a private residential golf course community with two golf courses (36 holes) and 820 residential lots. Treated wastewater is used for golf course irrigation, providing only part of the irrigation needs. Some of the treated wastewater is coming from the adjacent Kachina Village subdivision through an agreement between Forest Highlands and the Kachina Village Improvement District.

According to the June 2002 Phase I report, water rights concerns have kept Forest Highlands from reusing runoff, and instead water is pumped to adjacent national forest land to infiltrate and recharge the groundwater. According to the same report, in the summer of 2002 FHWC asked customers to voluntarily comply with the City of Flagstaff's mandatory restrictions for home landscaping.

Kachina Village

The Kachina Village Improvement District (KVID) provides water (and wastewater) service to the subdivision. Although a separate district, KVID is administered by the County and is in the Water and Wastewater division of County Public Works Department. There are five wells with a static water level of 650-1100 feet. There are four storage tanks with a capacity of 910,000 gallons. KVID provides a standpipe for water used for dust control, but it is not for sale to haulers. According to the Phase I Report Appendix, "One of the wells apparently experiences a drop in water level when Forest Highlands' wells are pumping heavily to irrigate that development's golf course." KVID has a conservation-based rate structure. There are educational flyers provided with the monthly bills and KVID distributes a quarterly newsletter.

Mountainaire

The Mountainaire subdivision and surrounding areas are served by a private water company, Ponderosa Utility. The service area includes development along Old Munds Highway just east of I-17 in the Mountainaire vicinity. The source is groundwater, and a standpipe for hauled water sales is available.

Fort Valley

Private individual or shared wells in this area are at a shallow depth (200 feet or less) in perched aquifers. There have been concerns about well stability in dry years, and about contamination from onsite wastewater systems. Some residents rely on hauled water from the City. There was a study done in the mid-1990s to assess concerns by area residents that septic systems were contaminating their wells. The results were inconclusive, although the high water level of the area warranted conventional systems no longer permissible.

Bellemont

Bellemont has historically been an important source for private and commercial water haulers, with two systems available, but they reportedly began having problems in the early 2000s. Bellemont Water Company on the south side of I-40 also provides water to some industrial and commercial users. The Bellemont Travel Center system no longer offers standpipe sales as it is owned by the developer of a new subdivision and the water is being directed for that use. Navajo Army Depot primarily relies on springs and very shallow wells. They have started looking to outside sources for hauling water.

Parks

Parks residents primarily haul water (individually or from commercial haulers), although there are some residents who have relatively shallow wells in perched aquifers. Due to the reduced availability of water from Bellemont and Williams, Parks has begun looking at a local community well. One well drilled on commercial land has been approved for water sales. The Parks Water Association was established to pursue the development of a non-profit water supply, storage and standpipe system for the Parks area.

Oak Creek Canyon

There are a mix of water sources serving residents in Oak Creek Canyon. Most are individual and served by either wells or springs. The Twin Springs Terrace Water Users Association and the Oak Creek Water Company are the area's two water system providers.

Mormon Lake

The Mormon Lake Lodge operates a water system that provides water to the Mormon Lake Townsite. Another system also relying on groundwater serves the Tall Pines subdivision.

Forest Lakes

The Forest Lakes Water Improvement District serves the subdivision with 832 active connections and a potential to serve all 966 lots. There are four operational wells, with the depth to water at 450', and there are 650,000 gallons of storage capacity. The FLWID charges an annual fee of $319 and does not have individual meters.

Starlight Water System

The Starlight Water System serves Starlight Pines and Starlight Pines Ranchettes, Pine Canyon, Blue Ridge Estates and Tamarron Pines. There are wells in each subdivision, with the depth to water at 600'-800'. Expansion would be possible to Clear Creek Pines Units 8 and 9 if they went through the appropriate process.

Mogollon Ranch

The Mogollon Ranch subdivision, located north and east of Starlight Pines, is served by 17 private systems, each serving 15 lots.

Gray Mountain

Gray Mountain is served by a private company, Anasazi Water Company.

Winslow West

Located at the county line, west of the City of Winslow, the Winslow West area is comprised of the Hopi Hills and Turquoise Ranch subdivisions. Although there was a branch water line previously from the City, water service was converted a number of years ago to the Winslow West Water Company. Other than the information provided in the 1999 Residential Rates Survey, there are no current estimates as to the systems present or potential future capacities.

Greenehaven

The Greenehaven subdivision is served by the Greenehaven Water Company, which also provides wastewater service. The original well serving this area was drilled in 1972, producing 600 GPM pumped to a 500,000 gallon reservoir. The ultimate water system development for this area has been calculated to have a design flow of about 1.35 million gallons per day. By 1992 the Greenehaven development had been approved by the Arizona Water Commission to use a water supply of 600 gallons per minute for 100 years.

Pinewood/Munds Park

The Arizona Water Company provides water to the Pinewood subdivision. The total storage capacity is 1.24 million gallons, derived from three wells (depths at 1252, 1332, and 1413 feet). As of August 2003 data, there were 2,833 customers in the Pinewood/Munds Park area, including a few on the western side of I-17. Although the community is surrounded by national forest, the water system could support additional customers should residential densities increase or infill occur within the subdivision. While water is occasionally sold to commercial haulers, there are no measures to encourage water conservation within the community.

Tusayan

There are two private water systems that supply the community with water. There are three wells at a depth of over 3000 feet—with water levels at 2400 feet—that serve about two-thirds of the community's needs; the balance is hauled. Tusayan has a very aggressive program of utilizing reclaimed wastewater, with double-plumbing of commercial buildings such that treated wastewater is used for toilet flushing. There is a system of reclaimed water lines throughout the community serving the commercial uses as well as providing all water for landscaping.

Tuba City

Tuba City is served by the Navajo Tribal Utility Authority.

Appendix E: Wildlife Considerations

Introduction

This appendix contains background information and methods, as well as recommendations for seven planning areas as determined by a group of wildlife experts convened by the County. Because of limitations of space within the Coconino County Comprehensive Plan itself, the wildlife group was not able to include all information deemed pertinent in that document. This appendix contains some of that information. Additional substantive information is presented in a separate Wildlife Reference Document.

This appendix and the reference document contain information that the wildlife group considered an important part of the County Plan that the County should use in their planning activities. The information presented represents the consensus opinion of the core group of wildlife biologists as gathered, discussed, debated, and agreed upon over a period of eight months (August 2002-April 2003).

Methods Used

Coconino County convened a group of wildlife experts on August 23, 2002, to assist with the preparation of the County Comprehensive Plan. This initial meeting was attended by the following persons: R.V. Ward (Grand Canyon National Park); Rick Miller (Arizona Game and Fish Department [AGFD]); Debbie Wright (AGFD); Paul Beier (Northern Arizona University); Shaula Hedwall (U.S. Fish and Wildlife Service); Michele James (Grand Canyon Trust [GCT]); Jack Metzger (Diablo Trust); Jackie Marlette (on temporary contract with Coconino County), and Steve Fluck (GCT).

The group was initially charged with expanding the Vegetation and Wildlife subsections of the Natural Environment section of the Comprehensive Plan. As a part of this effort, the group discussed the additional information that should be used to guide the Comprehensive Plan. This included descriptions of habitat, wildlife movement areas, springs, seeps, areas of importance topographically, and other places and habitats of importance to wildlife. The County clearly stated that the Comprehensive Plan's jurisdiction included state and private land only.

The workgroup began by examining 10 planning areas that the County had already identified. These are the areas for which there are adopted community area plans. It was understood that some areas between these planning areas were of importance to wildlife, and these were identified and drawn onto maps by the core group. Paul Beier of NAU, who formed the South Coast Missing Linkages Project in California, suggested that the wildlife group identify focal species that are sensitive to fragmentation. Thus, the process the group used was species based, but included the identification of habitat important to these species, or to species in general. The workgroup also attempted to identify threats to these species, particularly as they related to actions on state and private land.

The group identified, in the form of maps and with the use of area descriptions, what is currently known about the selected focal species and their habitat within the identified planning areas. Because the County indicated that the maps used to guide the Comprehensive Plan could be changed, the group felt that this approach would allow for the necessary flexibility. The wildlife group did not want to be locked into a particular set of information for the long term when this information is expected to change (with development, new research, additional information, etc.).

At subsequent meetings, the group discussed a strategy to meet the County's timeline, which included creating an initial list of focal species and determining priorities for planning areas. The core group of biologists

who consistently participated in the process consisted of: Debbie Wright and Rick Miller from the Arizona Game and Fish Department, Shaula Hedwall from the U.S. Fish and Wildlife Service, Michele James from the Grand Canyon Trust, and Larry Stevens from the Grand Canyon Wildlands Council. Other regular participants in the group included Jack Metzger from Diablo Trust, Bill Towler, Coconino County Community Development Director, Steve Fluck, GIS specialist from Grand Canyon Trust, and Jackie Marlette, GIS specialist on contract with the County.

This core group drafted an extensive revision of the Vegetation and Wildlife sections including a thorough summary of vegetative types represented in the County, a summary of fish, wildlife, and plants, their habitats, and threats to these habitats. In addition, the group worked to produce maps and summaries of wildlife movement areas and important wildlife habitat within the County. This initial work ("Phase I") considered the wildlife and habitat within the ten areas for which community areas plans have been developed. Four additional "planning areas" were determined to be of importance by the group. The workgroup prioritized the areas based on a combination of the rate and amount of development and the importance and uniqueness of wildlife habitat in a given planning area.

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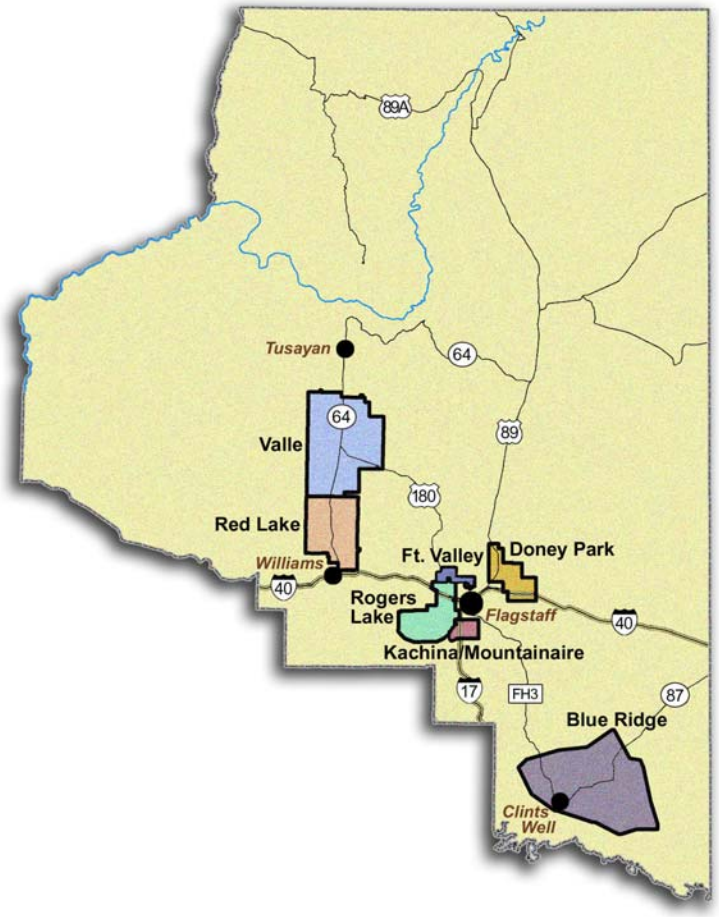
Wildlife Planning Areas



Priority 1

- Doney Park
- Red Lake
- Fort Valley
- Valle

Priority 2

- Kachina/ Mountainaire
- Rogers Lake
- Blue Ridge

Priority 3

- Parks
- Bellemont
- San Francisco Peaks

Priority 4

- Tusayan
- Oak Creek
- Munds Park

The wildlife group was able to complete initial work on seven of the planning areas (see above map). Within these planning areas, the wildlife group identified movement areas and important wildlife habitat for an initial list of 16 "focal species:"

- Pronghorn
- Mountain lion
- Elk
- Black bear
- Mule deer
- Turkey
- Badger
- Northern goshawk
- Gunnison's prairie dog
- Mexican spotted owl
- Tiger salamander
- Leopard frog (northern)
- Mexican vole
- Neotropical migrants
- San Francisco Peaks groundsel
- Flagstaff pennyroyal and/or other plants

Due to time limitations, the group gathered information on most, but not all, of the above species for the completed wildlife planning areas.

The wildlife group discussed plans to continue the momentum of this effort (termed "Phase I") in a more extensive and thorough review of wildlife movement areas and important habitat across the entire County. This second phase (Phase II) would include additional representatives from land management agencies, academia, and other interested members of the public. The County has indicated their willingness to utilize additional information gathered by the group in the future for planning purposes.

Work focused on gathering information from Arizona Game and Fish wildlife managers and habitat specialists, federal land management agencies, and researchers, as well as tapping the knowledge of the wildlife group. This information was placed onto planning area maps by the specialists and then digitized for use in a GIS system. Area descriptions of each planning area were produced; these include a list of specific recommendations for use by the County. GIS maps representing the findings of the group were provided to the County for use in their planning.

Detailed descriptions of the wildlife planning study areas are included in the Wildlife Reference Document. Explicit limitations and qualifications of the information is also defined.

Results & Considerations

While each of the seven examined planning area differs somewhat from other planning areas, several overriding issues arose during the Wildlife Group's inquiries. This in turn, resulted in consistent suggestions offered from the Wildlife Group to the County on means to address these issues. See the Wildlife Reference Document for a more detailed and thorough description of the issues.

Gunnison's prairie dog and pronghorn antelope habitat protection were two overarching issues that arose as a concern in the majority of planning areas. Both of these species have declined conspicuously in northern Arizona due to a variety of factors including habitat alteration caused by housing developments and changes in habitat structure and composition.

In many of the planning areas, wildlife movement areas were identified. Each of the movement areas differed depending on location and associated wildlife use. Protection of the connectivity offered in these movement areas and prevention of further fragmentation arose as overriding recommendations from the Wildlife Group.

Protection of water sources such as springs and lakes in the planning areas was an overriding suggestion by the Wildlife Group. Restoration of degraded springs and riparian vegetation was also recommended.

The presence of non-native plant species is a concern in the examined planning areas. While information is limited in some areas, primarily due to lack of information, if left unchecked these plants can spread very quickly. These infestations are more difficult to control and eradicate when they become large.

Several questions and data gaps arose for each planning area. These included the need for detailed vegetation maps and the inventory of the planning areas to determine the occurrence of focal species and identification of movement areas. This information would assist the County, as well as wildlife specialists, in locating important areas to be aware of for planning purposes.

Habitat Descriptions Overview

Coconino County is highly diverse in topography, ecosystems, and climate. The region contains the high southern margin of the Colorado Plateau, but is deeply incised by the Colorado River in Glen and Grand Canyons, and has an elevation range of 366-3850 meters (1,200-12,633 feet) (Grand Canyon Wildlands Council 2003). Ecosystems vary from hot desert shrublands, intermediate and Plateau elevation grasslands and shrublands, to coniferous woodlands, and ponderosa pine and mixed conifer and aspen-dominated Plateau and montane forests, as well as tundra habitat above treeline in the San Francisco Peaks (Grand Canyon Wildlands Council 2003). Detailed descriptions of habitats in Coconino County as well as narrative of common threats to habitat can be found in the Wildlife Reference Document.

The term *habitat* relates to the notion of presence of a species to attributes of the physical and biological environment (Morrison *et al.* 1992). In its simplest sense, habitat is the place containing resources needed for survival and reproduction. *Habitat use* is the manner in which a species uses a collection of environmental components to meet life requisites. Habitat use can be regarded in a general sense, or broken into specific acts or needs such foraging, nesting, or roosting (Block and Brennan 1993). *Habitat suitability*, the ability of habitat to provide necessary resources for an individual to survive and ultimately reproduce, varies temporally and spatially. Environmental changes result in unique arrangements of resources and, hence, different habitat. Temporal variations result from natural changes such as vegetation succession, fire, flood, or weather, or from anthropogenic change such as agriculture, urbanization, or water development (Block and Brennan 1993). Regardless of the underlying cause, it is critical to recognize that the environment changes constantly resulting in unique arrangements of resources and, hence, different habitats (Block and Brennan 1993).

Habitat selection/preference is the innate and learned behavioral responses that allow an individual to distinguish among various components of the environment resulting in the disproportional use of environmental conditions to influence survival and ultimate fitness of individuals (Block and Brennan 1993). Habitat selection is influenced by many factors, including interactions between individuals of the same and different species, competition, predators, disease, and parasites (Block and Brennan 1993). Species often require unique resources for different aspects of their life. For example, nest sites may occur in areas altogether different from where food resources are located. Types of activities that require specific environmental components include nesting, calving, foraging, roosting, bedding, and singing, among others. Seasonal changes in habitat use also occur. Requirements can differ by stages within a season, for example, during nesting and fledging periods, or between seasons, such as breeding and nonbreeding (Block and Brennan 1993). Migratory birds typically use different habitats on their breeding, migration, and wintering grounds. Use of habitat can vary from year to year as well. This often reflects the distribution of available resources. Vegetative structure, the layering of the canopy or the horizontal dispersion of patches, is a factor in determining where and how species use resources. Plant species composition also influences the distribution of species.

Another important habitat concept is *use versus preference.* It is often assumed that when a species or individual uses a particular habitat type this means that is the habitat of preference. In reality, this is not always the case. For instance, the Chiricahua leopard frog, a Federally threatened species, was once found in riparian areas in central and southern Arizona. With the significant alteration of riparian habitat in the state, this frog is currently largely found using habitat present in human-created stock tanks.

Some species require large areas in which to fulfill their life history requirements. This area is called a *home* range. For instance, the home range of a single Mexican spotted owl in northern Arizona has been measured to be between 702 and 2386 acres in size. Within their home range, owls may use very different types of habitat for nesting and foraging.

Species with large home ranges are commonly referred to as *wide-ranging species*. Other examples of these species in Coconino County are black bear, mountain lion, pronghorn antelope, and northern goshawk, among others. Besides having large home ranges, some of these species utilize specific movement corridors or areas. Bears for instance are known to use the steep canyons south of Flagstaff as an east-west movement corridor. Mountain lions are found on the Mogollon Rim and Kaibab Plateau and are very sensitive to human activities. Many raptors migrate long distances in the spring and fall and utilize thermal drafts over the Grand Canyon.

Some species are considered habitat specialists. For instance, the nesting southwestern willow flycatcher requires dense habitat along streams, rivers, and other wetlands where cottonwood, willow and other riparian trees are present. Nesting only occurs when these conditions are present in a certain juxtaposition and density. Some plant species are narrowly endemic and grow only under certain specific conditions. The Brady pincushion cactus for instance, grows only on Kaibab limestone ships overlying soils derived from the Moenkopi Formation.

Some species use habitats that are present only in certain areas and in small quantities. There are many examples of *unique habitats* in Coconino County including riparian areas, seeps and springs, alpine tundra, canyons, and caves. Riparian areas exist at all elevations within the County from the stream bands and wet meadows near the San Francisco Peaks to the shoreline of the Colorado River at the bottom of the Grand Canyon. While riparian areas only comprise a small amount of the land area in Coconino County, they typically support a proportionally large amount of species compared to surrounding habitats. Because riparian areas are rare habitat that is important to wildlife, they are essential and special features to conserve.

Springs and seeps in Coconino County are also unique habitats. They host a variety of invertebrates and plants, many of which are found nowhere else in the world. For example, Vaseys paradise spring is one of three springs in the Southwest where the endangered and endemic Kanab ambersnail is found. Some plant species, such as the Navajo sedge, are reliant upon springs for their survival. Springs support larger animals as sources of water as well. Seeps and springs are widely scattered throughout the County. The heaviest concentrations of springs exist at mid and low elevations and near the Colorado River and its major tributaries, however there are a fair amount of springs in higher elevations around the San Francisco Peaks and in areas surrounding Flagstaff.

Tundra habitat is present in only a small amount in Coconino County on the San Francisco Peaks (approximately 2,457 acres). Two species are endemic to the San Francisco Peaks tundra habitat type: a buttercup (*Ranunculus inamoenus* var. *subaffinis*), and the San Francisco Peaks groundsel (*Senecio franciscanus*). Only the water pipit (*Anthus spinoletta*), the Lincoln sparrow (*Melospiza lincolnii*), and the deer mouse (*Peromyscus maniculatus*) are known to breed in the tundra region of the San Francisco Peaks.

As stated previously, canyons provide movement corridors for wide-ranging species such as black bears. Canyons also often provide a cooler microclimate for species that require cooler areas for nesting. The Mexican spotted owl nests in canyons within Coconino County, including the Grand Canyon.

Caves offer respite from factors such as heat, precipitation and predation, and they attract many species of wildlife. Species such as small rodents, insects, ringtails, owls, hawks, mountain lions, bears and California condors have all been known to use caves or mines. Many of these species live and reproduce in these struc-

tures, and may utilize them year-round. In addition, some caves and mines have been used by these species for many years. Caves can provide stable temperature and humidity conditions for bat maternity roosts and hibernacula. Large and complex caves may offer a range of temperatures with cold air or warm air traps. Even small caves with no dark zone may be used by bats for night roosting.

Threats to Habitat

Environmental changes result in unique arrangements of resources and different habitats. It is important to note that these changes often benefit species of wildlife and plants, but can also threaten them. Threats to wildlife and plants and their habitats are complex and varied. They also change over time and can be cumulative; what is not now a threat to a particular species, may become one in the future, and vise versa. In this section, broad categories of threats are outlined.

Often, historic management changed habitat and the use of that habitat by wildlife. Examples include fire suppression and overgrazing which have significantly changed the structure and composition of forests in Coconino County. Ecosystem scientists generally agree that frequent, low intensity fires played a significant role in maintaining relatively open conditions in southwestern ponderosa pine forests by controlling tree population and forest floor litter accumulations (Cooper 1960, Kilgore 1981, Swetnam and Betancourt 1990, Covington et al. 1994, Swetnam and Baisan 1994). Human-caused changes, such as historic livestock grazing and fire suppression, have disrupted normal fire cycles and resulted in irruptions, or sudden increases, in tree population. This in turn has led to steadily increasing accumulations of fuel on the forest floor, reduced tree vigor, and conversions of vegetation from fire adapted species to fire intolerant species. In ponderosa and dry mixed conifer forests, unnaturally high fuel accumulations and densities of small trees are resulting in increasingly large and severe crown fires. These fires, often catastrophic in nature, threaten human and ecological values including old-growth forests, habitats for the threatened Mexican spotted owl and the sensitive northern goshawk, and forest soils. Many severely burned areas show little or no sign of recovery as a ponderosa forest, and vectors for undesirable exotic and noxious weeds. Catastrophic wildfire is now considered a major threat to some species of wildlife, such as the Mexican spotted owl (U.S. Fish and Wildlife Service 1995).

Other modifications traceable to the change in the normal fire cycle include a decrease of understory vegetation, epidemic insect and disease outbreaks, and increased potential for, and instances of, destructive wildfires. Despite the relative consensus among scientists and natural resource professionals that continuation of this situation is intolerable, methodologies appropriate for restoration of "natural" forest ecosystem function and process are the subject of considerable debate (Fiedler et al. 1996, Harrington 1996, Miller 1996, Covington et al. 1994).

Grazing by livestock undoubtedly affects species composition by reducing or removing palatable species and replacing them with thorny, less palatable, or even poisonous species and Nonnative species. Mac et al. (1998) suspect a significant trend in the reduction of biodiversity in these forest ecosystems is a function of fire suppression and grazing, but recognize that further research is needed. Riparian areas can be significantly affected by grazing. With heavy grazing, whether by elk or livestock, stabilizing vegetation deteriorates, banks are eroded, water storage capacity declines, water quality declines, streambeds become wider and stream depths shallower, water temperatures increase, and fish and aquatic invertebrate habitat quality declines (Mac et al. 1998).

The historic extermination of species considered predators to livestock in the late 1800s and early 1900s has resulted in the loss or reduction of large predators in the County such as the gray wolf and mountain lion. While the Mexican gray wolf has recently been successfully reintroduced in eastern Arizona, the current range of the wolf in the Southwest does not yet approach its historic range.

Most declines and extirpations of aquatic species in the Southwest can be traced to the construction of dams, either for water storage or flood control, and to other development on or near waterways, such as diversion structures. Dam building and water diversion have significantly degraded most major river systems, causing dire consequences for native fishes (Mac et al.1998). In current times as well as historically and prehistorically, people and animals congregated along riparian areas. Following settlement by European Americans, livestock congregated there too. Urban areas often occur in riparian areas, and ownership of riparian areas is overwhelmingly private. When free-flowing water is impounded or diverted from the main channel by dams, diversions, irrigation, or channelization, the nature of the riparian landscape changes. These structures have decreased or eliminated the shifting of river channels that historically created mosaics of riparian vegetation. With less flooding, there is less channel shifting and less suitable habitat for establishment of cottonwood seedlings. Modification of historical disturbance regimes results in a decline in diversity of native species because competitively superior nonnative plants may invade such as tamarisk (salt cedar) and Russian olive.

Exotic species (also called Nonnative or alien) are a significant threat in the County. Exotic plants such as tamarisk, knapweeds, and cheatgrass have characteristics that allow them to spread rapidly once established. Examples of these characteristics are high seed output, rapid seedling growth, vigorous vegetative reproduction, and long distance seed dispersal. These and other characteristics may provide them with competitive

advantages over native species. The invasion and spread of exotic species is a serious threat to ecosystems, and if exotics are not actively and aggressively managed, ecosystems are at risk of losing a portion of their biological resources. Exotic species have the ability to disrupt complex ecosystems, reduce biodiversity, degrade wildlife habitat, jeopardize endangered species, and alter genetic diversity.

Habitat fragmentation is generally defined as the division of contiguous tracts of wildlife habitat into progressively smaller patches (Harris 1984). Fragmentation of habitat is the major global environmental change occurring today and the one most likely to devastate biodiversity and ecological processes in the near future (Simberloff 1993). Numerous studies have detailed the positive relationship between wildlife diversity and large patch size (Ambul and Temple 1983, Burgess and Sharpe 1981, Forman et al. 1981, Whitcomb et al. 1981). An equal number of investigations has shown that a reduction in habitat size results in a decrease in species diversity and richness, regardless of the number of individual, smaller sized fragments that are created out of the preexisting "whole" (Hill 1985, Opdam et al. 1985, Lynch and Whigham 1984, Harris 1984, Forman et al.1976).

Beier and Noss (1998) define a corridor as a linear habitat, embedded in a dissimilar matrix, that connects two or more larger blocks of habitat and that is proposed for conservation on the grounds that it will enhance or maintain the viability of specific wildlife populations in the habitat blocks. They define passage as travel via a corridor by individual animals from one habitat patch to another. Connectivity declines with human modification of the landscape (Godron and Forman 1983). Corridors are an attempt to maintain or restore some of the natural landscape connectivity (Noss 1987). The continuing severance of natural linkages in many landscapes suggests that active strategies to combat the process and the consequences of fragmentation must proceed quickly, with or without "sufficient" data (Noss 1987).

Where connectivity is severed or restricted, barriers can often be identified. Barriers to movement and threats to connectivity as determined in the Missing Linkages Project for the state of California include (in order of percent of linkages threatened): urbanization, roads, agriculture, invasive species, logging, water diversions, vineyards, recreation, grazing, mining, off-road vehicles (ORVs), military activities, flow regime, border/fencing, wind turbines, railroads, habitat conversion, petrol extraction, harbor development, fuel breaks, wild horses, domestic dogs, water quality, power lines.

Timber harvest can result in fragmentation of habitat and can threaten regionally rare forest types such as subalpine conifer, aspen, late-seral (mature and old growth) ponderosa pine and late-seral pinyon juniper woodlands in northern Coconino County. Timber harvest may degrade habitat quality for wildlife dependent on these rare vegetation types for all or part of their life history. Timber harvest targeting the largest, most valuable trees should not be confused with ecological restoration of frequent-fire adapted forest types (ponderosa pine and drier mixed-conifer forests), which selectively removes small trees for the purpose of safely reintroducing surface fires.

Construction of roads, power lines and pipelines may result in fragmentation of wildlife habitat in Coconino County. Isolated patches of forest habitat are subject to a unique series of environmental perturbations. Wind exposure is but one example of this series. Small patches are highly susceptible to disproportionate amounts of storm damage in the form of fallen trees. High winds along the edges of these patches destroy bird nests in far greater numbers than that which occurs in forest interiors (Towle 1999). Continuous penetration of the forest edge by wind can create a drier interior that in turn can lead to changes in vegetation composition and patterns. These changes may negatively effect certain wildlife species.

Under natural conditions an unbroken forest is composed primarily of interior habitat. Forest interior species are frequently completely dependent on these relatively cooler, darker, more humid conditions. When forest dominated landscapes are fragmented by highly linear transportation corridors, the remaining fragments may not only be too small to support populations of interior species, the ratio between the interior and edge may favor species which prefer the latter. Even among species that may prefer edge habitat, corridors often prevent necessary dispersal. Wegner and Merriam (1979) demonstrated that deer mice (Peromyscus spp.), chipmunks (Eutamias spp.) and other small vertebrates were reluctant to cross corridors where they may be subject to increased predation. These and other species can become trapped in smaller patches where food and cover is limited, escape from external threat may be impossible, and mate selection is limited or non-existent.

Paradoxically, the most effective mitigation measure one can take to reduce these impacts is to further reduce the smaller patch size to the greatest extent possible. In this way the contiguous, unbroken fragment from which the "island" or patch was separated remains at its maximum size and productivity. In essence, if two fragments are to be created, the smaller one fragment is in relation to the other, the less will be the long-term disruption of wildlife habitat values (DeSanto and Smith 1993).

Roads also impact wildlife and habitat. Roads and road traffic (from standard vehicles to off-highway vehicles) has been shown in innumerable scientific studies to have various negative effects on various species. One of the greatest impacts of roads is their effect on the ecology of natural landscapes. Roads have changed the composition of vegetation, the dispersal and movement of animals and the flow of water and nutrients. Roads can also fragment and isolate populations of animals and plants, displace individuals, reduce breeding success, alter migration and behavior, increase pollution, serve as vectors for weeks, pests, and pathogens, alter the hydrology of watersheds, and also results in direct mortality. The cumulative im-

pacts of these changes across vast landscapes are difficult to measure, but undoubtedly critical in the long term.

Mitigation measures have been shown in a number of studies to be effective in reducing the impacts of habitat fragmentation caused by roads. Culverts, underpasses, overpasses and one-way gates can facilitate wildlife movement across transportation corridors (Reed et al. 1975; Singer and Doherty 1985; Leedy and Adams 1982). Ungulates and other large animals acquire knowledge of the location of such structures and adjust movements accordingly (Singer 1978; Reed et al. 1975). Reed et al. (1975) and Reed (1981) have noted that larger underpasses are used more frequently. Their research suggests minimum dimensions of approximately 14x14 ft. with natural dirt flooring. Underpasses can also significantly reduce highway-caused mortality of deer and other wildlife. Box culverts and/or underpasses along Interstate Highway 80 in Wyoming reduced road kills of mule deer by 90% (Leedy and Adams 1982).

Human-induced global warming threatens to change patterns of temperature, humidity and precipitation shaping the composition and distribution of biotic communities in Coconino County. As climate changes, native species composing biotic communities will migrate or adapt to more hospitable environments causing biotic community composition to change and generally migrate upslope. Isolated, endemic, imperiled or poorly dispersed species and populations—those least capable of migrating or adapting—are generally most threatened by these changes.

Species Descriptions Overview

The Endangered Species Act of 1973, as amended, includes two classifications of species, those that are "endangered" and those that are "threatened." A species may be classified for protection as endangered when it is in danger of extinction within the foreseeable future throughout all or a significant portion of its range. Endangered species in Coconino County at this time include the black-footed ferret, Mexican gray wolf, California condor, southwestern willow flycatcher, California brown pelican, Kanab ambersnail, humpback chub, Razorback sucker, Brady pincushion cactus, and Sentry milkvetch. The Gila chub is proposed for listing as an endangered species. A proposed species is one for which a Federal Register notice has been published proposing the species for listing as threatened or endangered. The species is not considered threatened or endangered until the final rule is published.

A threatened classification is provided to those animals and plants likely to become endangered within the foreseeable future throughout all or a significant portion of their ranges. Threatened species in Coconino County at this time include the bald eagle, Mexican spotted owl, Apache trout, Chiricahua leopard frog, Little Colorado spinedace, Navajo sedge, San Francisco Peaks groundsel, Siler pincushion cactus, and Welsh's milkweed.

A candidate species is one for which the Fish and Wildlife Service has on file sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened but for which the preparation and publication of a proposal is precluded by higher-priority listing actions. Candidate species in Coconino County at this time include Fickeisen plains cactus, and yellow-billed cuckoo.

Often when a species is placed on the list of candidates, there is an attempt to develop a candidate conservation agreement. The purpose of a conservation agreement is to determine a plan to implement conservation measures for the candidate species, and thus to preclude listing as threatened or endangered. There are currently two species in Coconino County with conservation agreements: Arizona bugbane and Paradine (Kaibab) plains cactus.

In addition to the above classifications of imperiled species as determined by the U.S. Fish and Wildlife Service, there are sensitive species that are determined by other agencies and organizations including the U.S. Forest Service, Bureau of Land Management, and Arizona Game and Fish Department. The U.S. Fish and Wildlife Service also maintains a list of species called "species of concern." Two of the better known include the northern goshawk and peregrine falcon.

Some species are considered to be of special management concern by the Arizona Game and Fish Department, meaning that something about their life cycle or their habitat makes them more sensitive to human development, logging, grazing, roads, weather, and so on. These species include pronghorn antelope, turkey, squirrels, neotropical migrants, some plants with very restricted ranges, and wide-ranging species such as mountain lion and black bear.

Hunting is an activity that is regulated by the Arizona Game and Fish Department. In Coconino County, all public land and state land is open to hunting except National Parks, private land that has been posted, or any Arizona Game and Fish Commission approved closed area. Hunting on Tribal lands is not regulated by the Arizona Game and Fish Department.

Coconino County supports a wide array of biota, including numerous endangered and ecologically important indicator species. Here we briefly describe each species or species group, along with its legal status, life history, distribution, habitat affiliations, population status, threats, and associated management goals and needs.

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Appendix F: Plan Adoption Resolution

Resolution No. 2003-63

A Resolution of the Coconino County Board of Supervisors Adopting the Coconino County Comprehensive Plan

WHEREAS, Arizona Revised Statutes (ARS) §11-821.A requires the Board of Supervisors to adopt a comprehensive, long-term county plan to guide and accomplish a coordinated, adjusted and harmonious development of the county; and

WHEREAS, ARS §11-824.D affirms that upon adoption, the plan shall be the official guide for the development of the county; and

WHEREAS, ARS §11-824.B states that county comprehensive plans are effective for up to ten years from their adoption; and

WHEREAS, the first Coconino County General Plan was adopted by the Board of Supervisors in 1974, replaced by the County Comprehensive Plan adopted on April 2, 1990, and subsequently readopted on December 18, 2001; and

WHEREAS, under direction of the Board of Supervisors, the Coconino County Community Development Department began in January 2002 to update the county comprehensive plan to more fully address the range and breadth of social, physical, economic, environmental, and demographic changes that have affected Coconino County since the 1990 plan was adopted; and

WHEREAS, the directive of the Board of Supervisors was to develop an innovative, conservation-based county comprehensive plan to harmoniously serve the interests of county residents, the environment, and future growth; and

WHEREAS, a broad spectrum of private individuals, community leaders, and organization and agency representatives came together as the Comprehensive Planning Partnership to assist in the planning process; and

WHEREAS, in order to ensure a fair and equitable public input process in developing the new county comprehensive plan, the Board of Supervisors on March 19, 2002 adopted a public participation and communications action plan as outlined in ARS §11-806.E.1; and

WHEREAS, copies of the proposed comprehensive plan were distributed for review and comment to municipalities, agencies, and interested persons as required by ARS §11-806.H; and

WHEREAS, in compliance with ARS §11-822 the Planning & Zoning Commission held a duly noticed public hearing on July 29, 2003 and unanimously recommended approval of adoption of the new comprehensive plan; and

WHEREAS, in accordance with ARS §11-823 the Board of Supervisors held a duly noticed public hearing on September 16, 2003;

NOW, THEREFORE, BE IT RESOLVED by the Board of Supervisors of Coconino County as follows:

Section 1: Adoption of the Comprehensive Plan. The Coconino County Board of Supervisors HEREBY ADOPTS and APPROVES the Coconino County Comprehensive Plan. This plan supersedes the 1990 Comprehensive Plan.

Section 2: Consistency with Statutes. In adopting the Coconino County Comprehensive Plan, the Board of Supervisors HEREBY FINDS, DETERMINES, and DECLARES that every reasonable effort has been made to comply with Arizona Revised Statutes and Arizona Growing Smarter legislation.

Section 3: Public Comment. The Board HEREBY AFFIRMS that it considered, to the best of its ability, all public testimony and all relevant information provided to it; and that the comprehensive plan adopted by this resolution represents the Board's best effort to accommodate the diverse and competing needs of residents, property owners, and social and economic components of the county's population and workforce.

Section 4: Plan Contents. The Board of Supervisors of Coconino County HEREBY FINDS, DETERMINES, and DECLARES that the adopted comprehensive plan:

A. Contains a thorough and adequate treatment of land use, development, and environmental resource conservation issues.

B. Includes a wide variety of policies to conserve the natural resources of the county, to insure efficient expenditure of public funds, and to promote the health, safety, convenience, and general welfare of the public.

C. Represents an advancement in the county's planning practices through the plan's conservation guidelines of assessing impacts of local decisions in a landscape context; making land use decisions that are compatible with the natural potential of the site and the landscape; avoiding or mitigating for the effects of human use and development on ecological processes and the landscape; identifying and preserving rare or critical ecosystems, habitats, and associated species; minimizing the fragmentation of large contiguous areas of habitat and maintaining or restoring connectivity among habitats; minimizing the introduction and spread of non-native species and using native plant species in restoration and landscaping; conserving use of non-renewable and critical resources; avoiding land uses that deplete natural resources; avoiding pollution of our communities and environment; considering land use decisions over time horizons that encapsulate the natural variability of ecosystems; and evaluating the effects of land use decisions cumulatively and over time.

Section 5: Coordination of Plans. The Board HEREBY FINDS, DETERMINES, and DECLARES that through the efforts of the Comprehensive Planning Partnership, every reasonable effort has been made to ensure maximum coordination of plans in the county as required by ARS §11-806 subsections E and G. The Board AFFIRMS that the adopted comprehensive plan is compatible with the Flagstaff Area Regional Land Use and Transportation Plan; the Board FURTHER DECLARES that both plans shall be used, as applicable, by the Planning & Zoning Commission and Board of Supervisors in determining findings for land use decisions. Furthermore, the Comprehensive Plan is consistent with the adopted community area plans that have been approved as amendments to the plan.

Section 6: Implementation and Reporting. The Board HEREBY AFFIRMS the importance of implementation measures to realize more fully the intent of the comprehensive plan. The Board DIRECTS the Community Development Department to begin work on the designated implementation plan. Immediate actions to be undertaken may include the preparation of revised zoning, subdivision and other ordinances necessary to implement the new comprehensive plan. In accordance with the procedures outlined in the implementation plan, the Board FURTHER DIRECTS the Community Development Department to review the plan annually and file an annual report with the Board reviewing the status of the comprehensive plan and its implementation. This process should occur concurrently with the county's annual workplan and budget process.

Section 7: Primacy of the Comprehensive Plan. The Board of Supervisors HEREBY FINDS, DETERMINES, and DECLARES that the approved comprehensive plan represents the County's officially adopted policy for the growth, land use, development, and protection of Coconino County.

Section 8: Severability. The Board of Supervisors HEREBY FINDS and DECLARES that it has adopted this comprehensive plan in its entirety. In the event that any court declares any part of this comprehensive plan to be null and void, the remaining portions shall remain in full force and effect. The Board declares that it has adopted this plan as if it had adopted each phrase, sentence, and element thereof separately.

Section 9: Passage and Adoption. The Chair of the Board of Supervisors of Coconino County shall sign, and the Clerk of the Board shall certify to the passage and adoption of this Resolution, and thereupon the same shall take effect and be in force.

APPROVED and ADOPTED this 23rd day of September 2003, by the Board of Supervisors of the County of Coconino, Arizona.

Matthew G. Ryan, *Chair, Coconino County Board of Supervisors*